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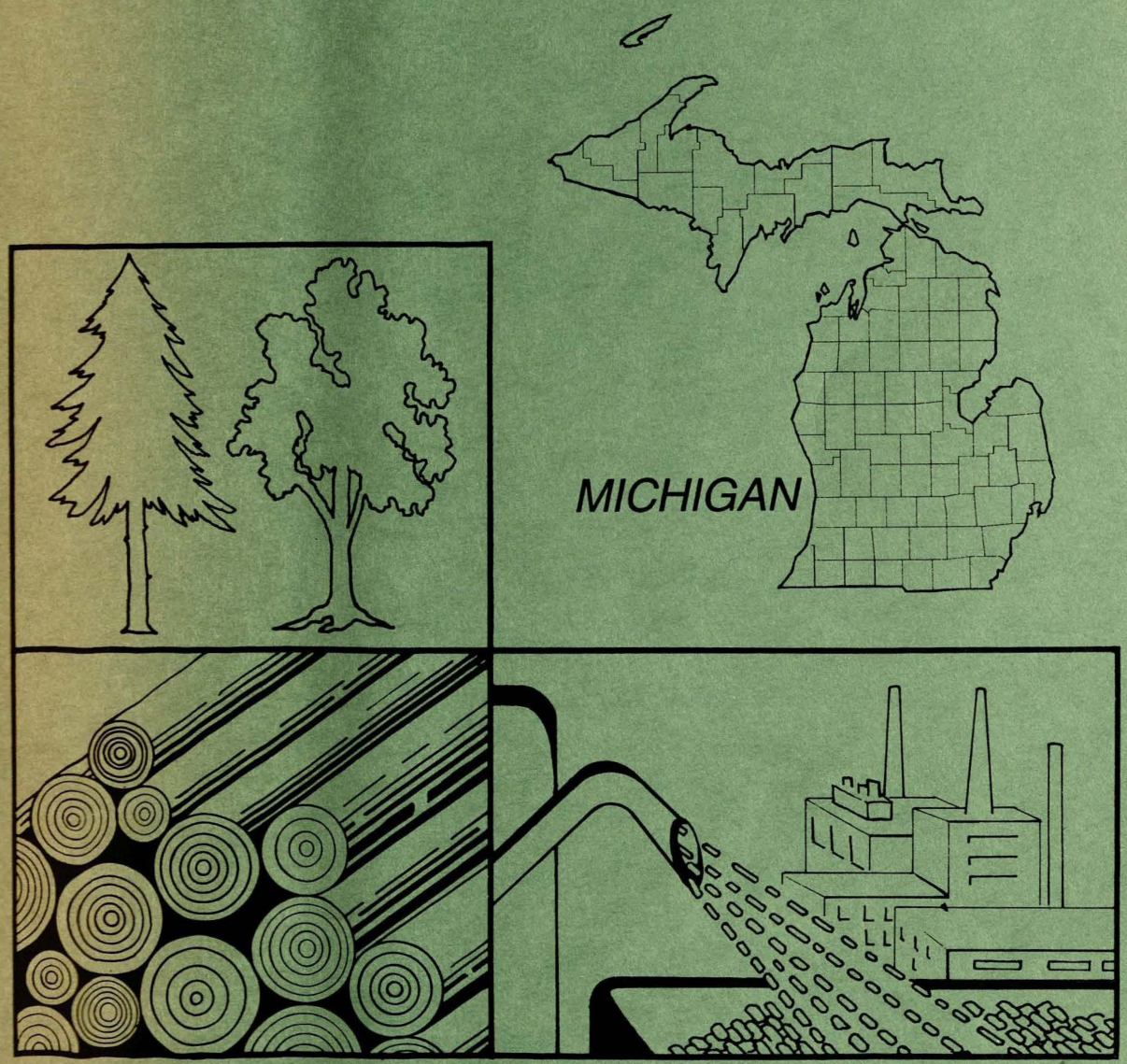
Michigan Timber Industry - An Assessment of Timber Product Output and Use, 1992

Dennis M. May and John Pilon



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FOREWORD

This bulletin reports the findings of a survey of all primary wood-using mills in Michigan in 1992 and details the industry's size and composition, its use of roundwood, and its generation and disposition of wood residues. (Note: Nonindustrial uses of Michigan roundwood are detailed in a separate Station publication, *Residential fuelwood consumption and production in Michigan, 1992.*) Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, forest industry development, and forest research.

Special thanks are given to the primary wood-using firms that responded to the survey and to the Michigan Department of Natural Resources for canvassing the respondents. Their cooperation is greatly appreciated.

In this bulletin, all volumes are reported in product-specific standard units and/or cubic feet. When necessary, volumes reported by mills in nonstandard units were converted to standard units using regional conversion factors. For example, all board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.08 to all saw-log volume reported in Scribner Decimal C scale by sawmills, a multiplier of 1.04 to all veneer log volume reported in Scribner Decimal C scale by veneer mills, a multiplier of 1.38 to all saw-log volume reported in Doyle scale by sawmills, and a multiplier of 1.14 to all veneer log volume reported in Doyle scale by veneer mills.

Most reported trends and changes in Michigan's primary wood-using industry are based on comparisons with a previous survey of the State's primary wood-using industry conducted in 1990. Row and column data of tables may not sum due to rounding, but data in each table cell are accurately displayed.

Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1992

Dennis M. May and John Pilon

HIGHLIGHTS

PRIMARY TIMBER INDUSTRY—INDUSTRIAL ROUNDWOOD

- In 1992, Michigan's primary wood-using industry was comprised of 317 mills, not including 38 sawmills that processed less than 50 thousand board feet each in 1992 (table 1).
- Most of the State's primary wood-using mills are located in the three most northern Forest Survey Units (figs. 1,2).
- Between 1990 and 1992, Michigan's primary wood-using industry declined by 38 mills, most of which were small sawmills (table 1).
- In 1992, Michigan's primary wood-using industry processed 329.2 million cubic feet of roundwood (table 2), slightly more than a larger number of mills processed in 1990.
- Michigan's 11 pulp mills processed 200.6 million cubic feet of roundwood in 1992, down 6 percent from 1990, but still twice as much as that processed by the far more numerous sawmills and still enough to account for three-fifths of all roundwood processed.
- Hardwood species comprised 4 out of every 5 cubic feet of roundwood processed by the State's primary wood-using industry in 1992.
- In 1992, 346.8 million cubic feet of industrial roundwood products were extracted from Michigan's forests (table 3), essentially the same as in 1990. Although the total was stable, softwood harvests increased by 14 percent, offsetting a 4-percent decline in hardwood production in the same time period.
- Most of the increase in softwood production was associated with the increased use of jack pine for pulpwood and industrial fuel and the increased use of red pine for saw logs and industrial fuel.
- Most of the decline in hardwood production was associated with reduced use of aspen, birch, and oak for pulpwood.
- Overall, pulpwood production declined by 2 percent between 1990 and 1992, and it offset increased production of saw logs, veneer logs, and industrial fuelwood.
- Despite the decline in production, pulpwood remained the predominant roundwood product harvested from Michigan's forests (fig. 3).
- The State's industrial roundwood production was about equally split between the Upper and Lower Peninsulas, but more industrial roundwood came from the Northern Lower Peninsula than from any other Forest Survey Unit (fig. 4).
- Almost all of the industrial fuelwood and close to three-quarters of the saw-log production came from the Lower Peninsula, while 68 percent of both the pulpwood and veneer log harvests came from the Upper Peninsula.

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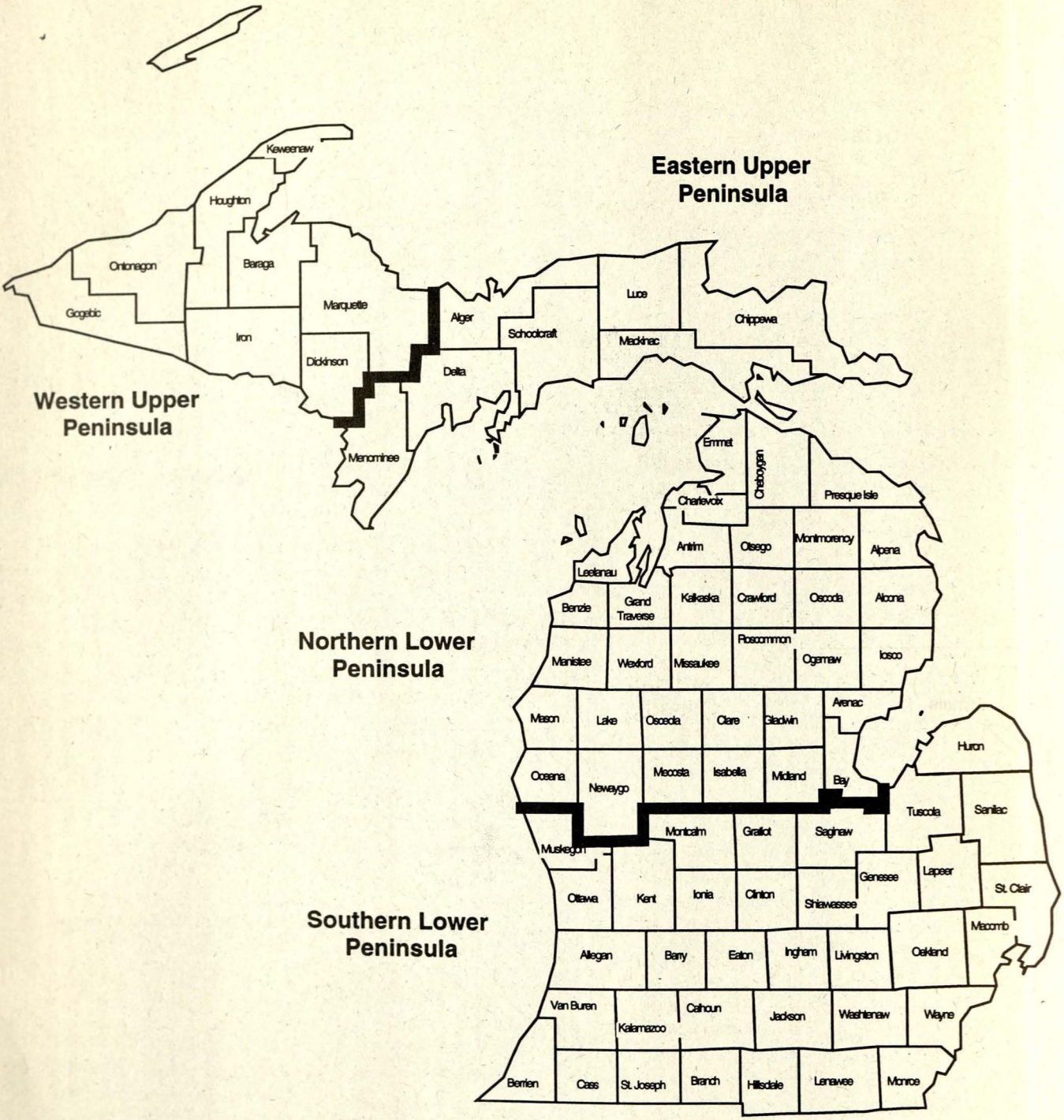

Figure 1.—Forest Survey Units in Michigan.

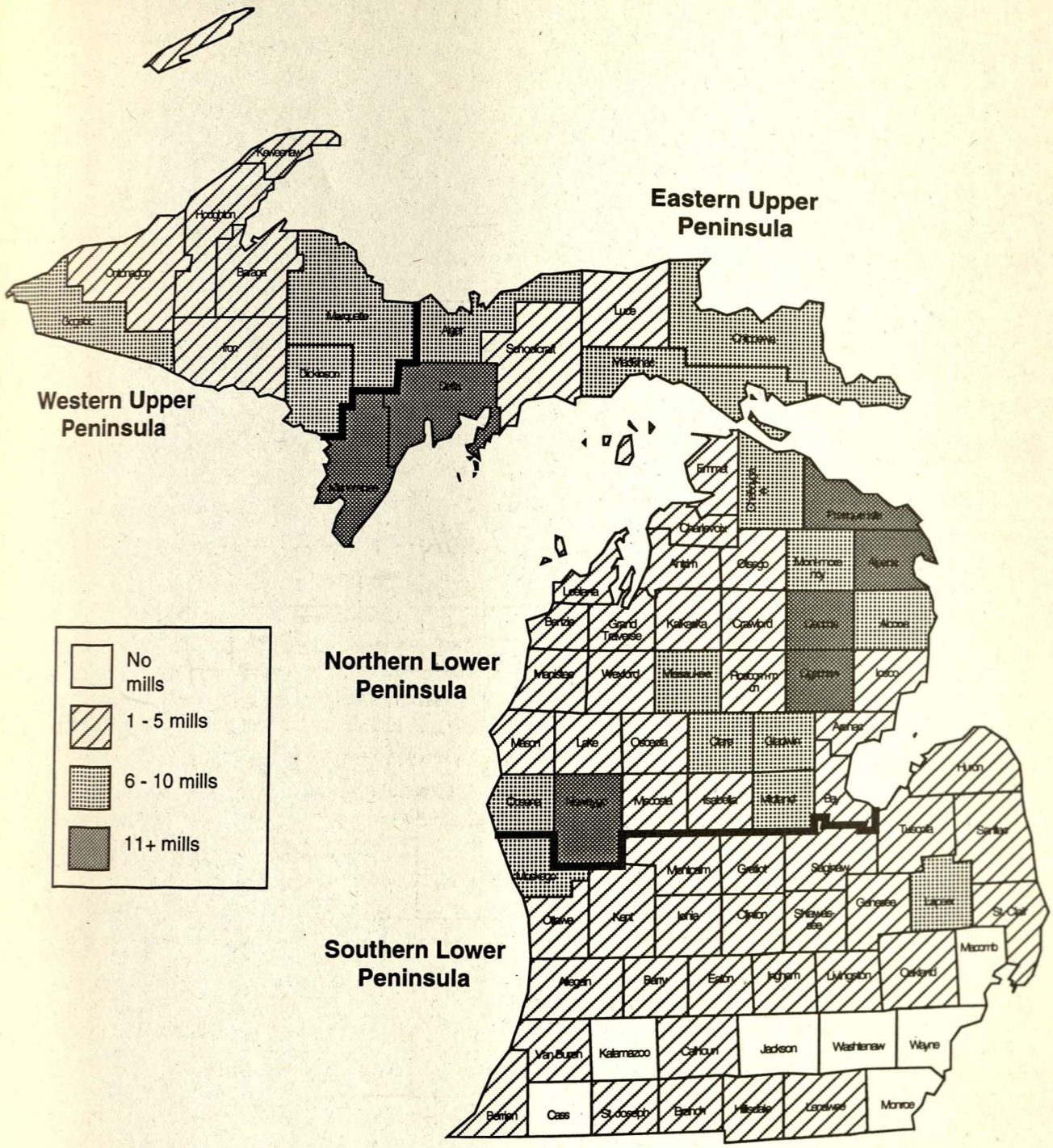

Figure 2.—Number of primary wood-using mills by county, Michigan, 1992.

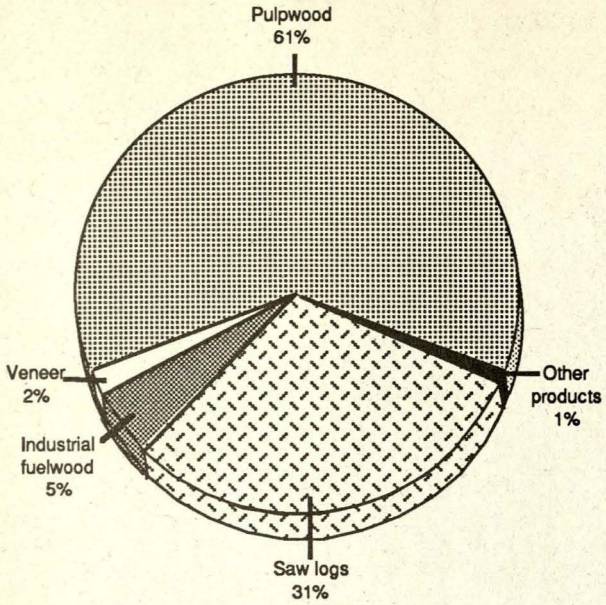

Figure 3.—Distribution of industrial roundwood production by product, Michigan, 1992.

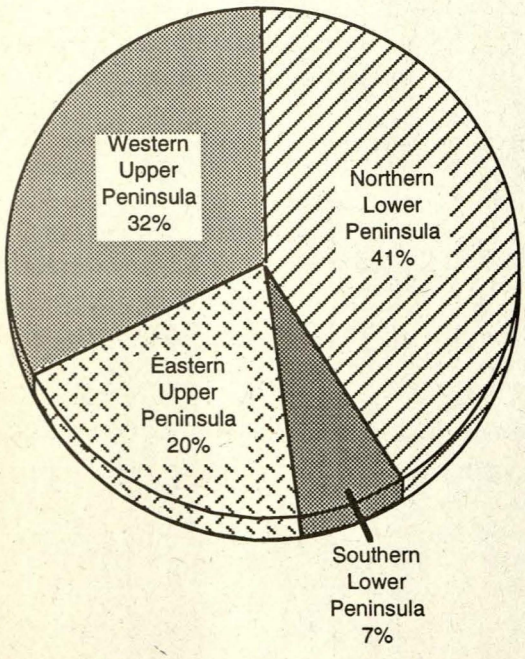

Figure 4.—Distribution of industrial roundwood production by Forest Survey Unit, Michigan, 1992.

- In the process of extracting industrial roundwood products, 429.1 million cubic feet of woody material were removed from Michigan's forests (table 4), about the same as in 1990.

- Four-fifths of this volume was extracted for use as roundwood products; the rest was left on the ground as harvest residues (fig. 5).

- Of the volume left on the ground, about three-quarters was in tops and cull material (logging slash), and the rest (logging residues) came from the growing-stock portions of live timberland trees.

- Of the volume extracted for industrial roundwood products, only 13 percent came from non-growing-stock sources such as cull and dead trees, forks and large limbs, saplings, stumps, and tops.

- In total, three-quarters of the woody material removed came from growing-stock sources (sawtimber, poletimber, and logging residues).

- Six species—aspen, hard maple, soft maple, red oak, jack pine, and red pine—made up three-quarters of growing-stock removals. Aspen alone accounted for about a third of growing-stock removals.

PULPWOOD

- Although Michigan's production of pulpwood (including both roundwood and mill residues generated by the State's other primary wood-using industries) has been steadily increasing over time, pulpwood production has been fluctuating around the 3 million cord mark for the last 5 years (table 5).

- In 1992, pulpwood production in Michigan totaled 2,877 thousand cords, a 4-percent decline from 1990. Much of the decline was concentrated in aspen, but increased production of pine pulpwood partially offset these losses.

- In 1992, roundwood supplied 92 percent of the pulpwood produced, and aspen supplied two-fifths of the roundwood.

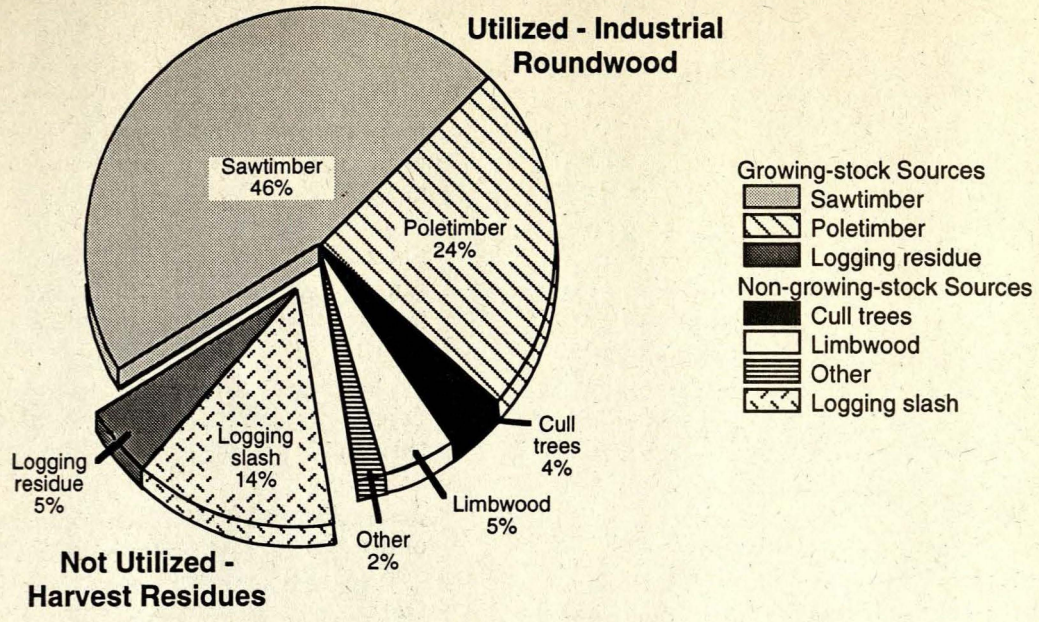

Figure 5.—Distribution of timber removals for industrial roundwood by source of material, Michigan, 1992.

- Michigan's pulp and board mills consumed 88 percent of the State's production of pulpwood (table 6). The remainder was shipped out of State for processing, mainly to pulp and board mills in neighboring Wisconsin.
- Aspen was the most common species exported.
- Two-thirds of the State's production of roundwood pulpwood was harvested from the Upper Peninsula, with about two-fifths coming from the Western Upper Peninsula alone (table 7).
- One county, Marquette, reported more than 350 thousand cords of roundwood pulpwood cut in 1992.
- In 1992, pulpwood receipts totaled 2,801 thousand cords, a 4-percent decline from 1990 (table 8). Much of the decline occurred in aspen, birch, and hardwood residues and was only partially offset by increased receipts of pine and the other hardwood group.
- In 1992, roundwood pulpwood supplied 94 percent of the pulpwood received; together, aspen and the other hardwood group supplied three-quarters of the roundwood.
- Michigan supplied 90 percent of the pulpwood processed by its pulp and board mills in 1992. The remainder was imported from neighboring States, mainly Wisconsin (table 9).
- White birch, hard maple, and aspen were the main species imported (table 10).
- The dramatic increase in pulpwood receipts over time and especially in the last 20 years is a direct result of expanding capacity in the pulp and board sector of the State's primary forest industry as illustrated below:

Year	Production	(-) Exports	(=) Internal	(+) Imports	(=) Receipts
			(Thousand cords)		
1946	845	586	259	157	416
1992	2,877	345	2,532	269	2,801

In 1946, 69 percent of the State's production of pulpwood was exported out of State for processing. The remaining pulpwood produced was used internally to supply the State's pulp and board industry. However, internal production only supplied 62 percent of the industry's needs in 1946, and imports, mainly from Canada, had to make up the difference. Overall, Michigan's production of pulpwood in 1946 far outstripped the needs of its pulp and board industry, making it a net exporter of 429 thousand cords. In contrast, the increasing capacity of the State's pulp and board industry over the years caused a seven-fold increase in pulpwood demand (receipts) by 1992. In response, the State's production of pulpwood increased by 340 percent over the same time period, while exports declined to only 12 percent of production. As a result, Michigan was 90 percent self-sufficient in supplying the greatly increased demand of its pulp and board industry in 1992, while still managing to be a net exporter of 76 thousand cords of pulpwood.

SAW LOGS

- The production of the State's second largest industrial roundwood product, saw logs, increased slightly (1 percent) between 1990 and 1992 to 632.4 million board feet (table 11).

- Most of this increase was associated with red pine and aspen.

- Saw-log receipts also increased slightly, but all of the increase was associated with softwood saw logs, especially red pine saw logs. The decline in hardwood saw-log receipts was due to decreases in maple, oak, beech, and birch that were not offset by increases in aspen, basswood, ash, and the other hardwood group.

- Michigan sawmills processed 90 percent of the State's production of saw logs (table 12). The remainder was shipped out of State for processing.

- Wisconsin and Indiana were the two largest recipients of Michigan saw logs. Red oak was the single largest species exported to Indiana, while hard maple was the single largest species shipped to Wisconsin sawmills.

- Most of the saw-log volume exported to Wisconsin came from the Upper Peninsula, while all of the saw-log volume exported to Indiana came from the Southern Lower Peninsula.

- More than half of the State's production of saw logs came from the Northern Lower Peninsula (table 13).

- Major saw-log producing counties with more than 20 million board feet each were Alcona, Baraga, and Ontonagon.

- Michigan supplied 98 percent of the saw-log volume needed by its sawmills in 1992 (table 14). The remainder was pulled in from a number of States; neighboring Wisconsin supplied most of the deficit.

- Five species—aspen, red oak, hard maple, red pine, and soft maple—accounted for three-quarters of the State's sawmilling activity. These top five species also accounted for most of the saw-log volume imported into the State.

- Three-fifths of the State's saw-log receipts were processed in the Northern Lower Peninsula.

- Most of the saw-log volume imported from the Lake States and Canada was processed in the Upper Peninsula, while most of the remaining imports were processed in the Southern Lower Peninsula. The Northern Lower Peninsula was totally self-reliant in supplying its sawmills with saw logs.

VENEER LOGS

- Between 1990 and 1992, veneer-log production in Michigan increased by 1 percent to 38.2 million board feet, while veneer-log receipts declined by 4 percent to 40.3 million board feet (table 15).

- Although the production of hard maple veneer logs declined by 15 percent from 1990 to 1992, hard maple remained the single largest species of veneer log produced in Michigan, accounting for 38 percent of all veneer logs produced in the State. In contrast, aspen, which increased by 42 percent between surveys, was the single largest species of veneer log processed in the

State, accounting for almost half of all veneer logs processed (table 16).

- Michigan retained half of the veneer-log volume it produced in 1992 (table 17). The other half was shipped out of State for processing, mostly to Wisconsin.

- Hard maple was the major species of veneer log exported from Michigan.

- Slightly more than half of all veneer-log volume was produced in the Western Upper Peninsula.

- Michigan supplied only 48 percent of the State's veneer-log requirements in 1992 (table 18).

- To fill the deficit, Michigan pulled veneer logs from numerous States and Canada, but Wisconsin supplied most of the veneer-log volume imported.

- Aspen comprised 80 percent of the veneer-log volume imported from Wisconsin, and 70 percent of the aspen processed in Michigan veneer mills came from Wisconsin (table 19).

OTHER PRODUCTS

- In 1992, industrial fuelwood totaled 18 million cubic feet, up 22 percent from 1990. (Note: Residential fuelwood use in Michigan is detailed in a separate Station publication, *Residential fuelwood consumption and production in Michigan, 1992.*)

- All of the increase in industrial fuelwood production occurred in softwood species, mainly red and jack pines. Hardwood use declined as decreases in maples and aspen offset gains in red oak use.

- Almost all of the industrial fuelwood was harvested from the Northern Lower Peninsula.

- In 1992, 4.4 million cubic feet of other industrial roundwood products were cut in Michigan. These products, in descending order of volume, included posts, cabin logs, excelsior/shaving bolts, poles, other miscellaneous products, and mine timbers.

- Except for excelsior/shaving bolts, which were cut exclusively from aspen, almost all of the volume for these other products were cut from softwood species. Red pine contributed most of the pole volume, northern white-cedar made up most of the post volume, and both red pine and cedar were important cabin log species.

- Pole production showed a decrease between surveys because cabin log volume was reported separately in 1992 rather than combined with pole volume as in 1990.

TIMBER REMOVALS

- In the production of industrial roundwood, 322 million cubic feet of wood were removed from Michigan's growing-stock inventory in 1992 (table 20), a slight decline from 1990.

- Fifty-two percent of the growing-stock removals came from the Upper Peninsula, the region of the State where pulpwood production is concentrated.

- Aspen alone accounted for one-third of all growing-stock removals.

- Industrial roundwood extraction also removed 1,023 million board feet of wood from the sawtimber portion of the growing-stock inventory in 1992 (table 21), a 1-percent increase over 1990.

- More than half of all sawtimber removals (56 percent) occurred in the Lower Peninsula, the area of the State where saw-log production is concentrated.

- Sawtimber removals were concentrated in four species—aspen, hard maple, red oak, and red pine—which together made up 62 percent of all sawtimber removals. Aspen alone accounted for a quarter of all sawtimber removals.

- The conflicting decline in growing-stock removals and increase in sawtimber removals between surveys can be explained by the decline in pulpwood production and the increase in saw- and veneer-log production in 1992.

HARVEST RESIDUES

- In 1992, extraction of industrial roundwood products left 82.4 million cubic feet of harvest residues on the ground (table 22), a 2-percent increase over 1990 generally because of the increased harvests of saw logs and veneer logs in 1992.

- Three-fifths of the harvest residues were left in the Upper Peninsula, with another third left in the Northern Lower Peninsula.

- Two species, aspen and hard maple, accounted for 45 percent of all harvest residues.

PRIMARY MILL RESIDUES

- In converting industrial roundwood into milled products, such as lumber, sheathing, and wood pulp, Michigan's primary wood-using industry generated 2.3 million green tons of wood and bark residues (table 23).

- Bark and coarse wood residues each made up about two-fifths of the total volume; fine wood residues made up the remainder (fig. 6).

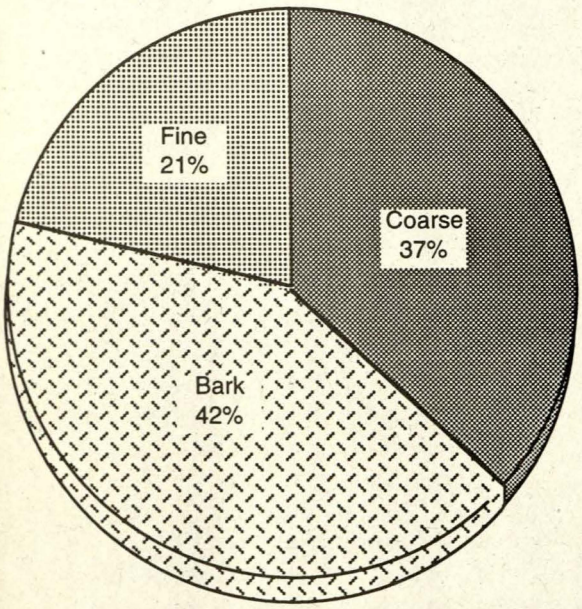

Figure 6.—Distribution of residues generated by primary wood-using mills by type of residue, Michigan, 1992.

- Almost all of the mill residues were used (fig. 7), half of which ended up as industrial fuel.

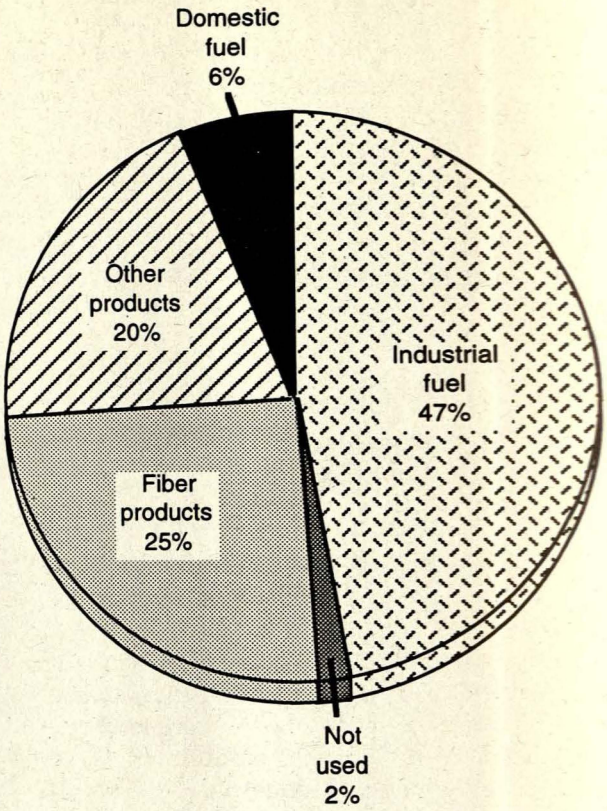

Figure 7.—Distribution of residues generated by primary wood-using mills by method of disposal, Michigan, 1993.

- Half of the mill residues used for industrial fuelwood were burned at the mills at which they were generated; the other half was sold to other mills before being burned.

- In general, most coarse wood residues were used for fiber products; most fine wood residues were used for either fuel or miscellaneous products, such as bedding, litter, and mulch; and most bark was burned as fuel.

- Half of all mill residues were generated in the Northern Lower Unit, and two-thirds of all unused mill residues were also located in the Northern Lower Unit.

APPENDIX

STUDY METHODS

This study was a cooperative effort of the Michigan Department of Natural Resources (MIDNR) and the North Central Forest Experiment Station (NCFES). Using mail questionnaires supplied by NCFES and designed to determine the size and composition of the State's primary wood-using industry, its use of roundwood, and its generation and disposition of wood residues, the MIDNR canvassed all primary wood-using mills within the State. The MIDNR followed up on nonresponding mills by using additional mailings, telephone, and personal contacts until a 100-percent response was achieved. Completed questionnaires were sent to NCFES for editing and processing.

As part of data editing and processing, all industrial roundwood volumes reported on the questionnaires were converted to standard units of measure using regional conversion factors. Timber removals by source of material and harvest residues generated during logging were estimated from standard product volumes using factors developed from logging utilization studies previously conducted by NCFES. Finalized data on Michigan's industrial roundwood receipts were loaded into a regional timber removals data base and supplemented with data on out-of-State uses of Michigan roundwood to provide a complete assessment of Michigan's timber product output.

DEFINITION OF TERMS

Board foot.—Unit of measure applied to roundwood. It relates to lumber that is 1 foot long, 1 foot wide, and 1 inch thick (or its equivalent).

Central stem.—The portion of a tree between a 1-foot stump and the minimum 4.0-inch top diameter outside bark or the point where the central stem breaks into limbs.

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam, osage-orange, and redbud.)

Cull removals.—Net volume of rough and rotten trees, plus the net volume in sections of the central stem of growing-stock trees that do not meet regional merchantability standards, harvested for industrial roundwood products.

Dead removals.—Net volume of dead trees harvested for industrial roundwood products.

Diameter at breast height (d.b.h.).—The outside bark diameter at 4.5 feet above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide.

Growing-stock removals.—The growing-stock volume removed from the timberland inventory by harvesting industrial roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree.—A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods.—Dicotyledonous trees, usually broad-leaved and deciduous.

Harvest residues.—The total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Industrial roundwood products.—Saw logs, pulpwood, veneer logs, poles, commercial posts, piling, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood production.—The quantity of industrial roundwood harvested in a geographic area.

Industrial roundwood receipts.—The quantity of industrial roundwood received by commercial mills in a geographic area.

International 1/4-inch rule.—A log rule or formula for estimating the board foot volume of logs, allowing 1/2 inch of taper for each 4-foot length. The rule appears in a number of forms that allow for kerf. In the form used by FIA, a 1/4-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Limbwood removals.—Net volume of all portions of a tree other than the central stem, (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

Logging residue.—The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash.—The net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

Merchantable sections.—Sections of the central stem of growing-stock trees that meet either pulpwood or saw-log specifications.

Net volume.—Gross volume less deductions for rot, sweep, or other defects affecting use for roundwood products.

Noncommercial species.—Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial roundwood products. Classified in volume tables as rough trees.

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 39.9-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, improved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.)

Nonforest land removals.—Net volume of trees on nonforest lands harvested for industrial roundwood products.

Poletimber.—A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Poletimber removals.—Net volume in the merchantable central stem of poletimber trees harvested for industrial roundwood products.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some byproduct.

Rotten tree.—A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree.—A tree that does not meet regional merchantability standards because of excessive sound cull. Includes noncommercial tree species.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling.—A live tree between 1.0 and 5.0 inches d.b.h.

Sapling removals.—Net volume in saplings harvested for industrial roundwood products.

Saw-log portion.—That portion of the central stem of sawtimber trees between the stump and the saw-log top.

Saw-log top.—The point on the central stem of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber removals.—As used in table 4, sawtimber removals refers to the net volume in the merchantable central stem of sawtimber trees harvested for industrial roundwood products. (Note: Includes the saw-log and upper stem portions of sawtimber trees.) In the case of sawtimber volume removed from the timberland inventory as in table 21, sawtimber removals refers to the net volume in the saw-log portion of sawtimber trees harvested for roundwood products or left on the ground as harvest residue, and is usually expressed in thousands of board feet (International 1/4-inch rule).

Sawtimber tree.—A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h., and hardwoods must be at least 11.0 inches d.b.h.

Sawtimber volume.—Net volume in the saw-log portion of sawtimber trees.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Tree.—A woody plant usually having one or more perennial stems, a more or less definitely formed crown of foliage, and a height of at least 12 feet at maturity.

Timberland.—Forest land that is producing, or is capable of producing, in excess of 20 cubic feet per acre per year of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development.

Timber product output.—The volume of roundwood products produced from an area's forests.

Upper stem portion.—That portion of the central stem of sawtimber trees between the saw-log top and the minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Veneer log.—Logs to be used in the production of plywood, finished panels, or veneer sheets, both rotary cut and sliced.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS

Eastern white pine ..... *Pinus strobus*
Red pine ..... *Pinus resinosa*
Jack pine ..... *Pinus banksiana*
Spruce
  White spruce ..... *Picea glauca*
  Black spruce ..... *Picea mariana*
Balsam fir ..... *Abies balsamea*
Eastern hemlock ..... *Tsuga canadensis*
Tamarack ..... *Larix laricina*
Northern white-cedar ..... *Thuja occidentalis*

HARDWOODS

White oak
  White oak ..... *Quercus alba*
  Bur oak ..... *Quercus macrocarpa*
  Chinkapin oak ..... *Quercus muehlenbergii*
  Swamp white oak ..... *Quercus bicolor*
Red oak
  Northern red oak ..... *Quercus rubra*
  Black oak ..... *Quercus velutina*
  Pin oak ..... *Quercus palustris*
Hickory
  Bitternut hickory ..... *Carya cordiformis*
  Pignut hickory ..... *Carya glabra*
  Shagbark hickory ..... *Carya ovata*
White birch ..... *Betula papyrifera*
Yellow birch ..... *Betula alleghaniensis*

Hard maple
Black maple ..... *Acer nigrum*
Sugar maple ..... *Acer saccharum*
Soft maple
Red maple ..... *Acer rubrum*
Silver maple ..... *Acer saccharinum*
American beech ..... *Fagus grandifolia*
Ash
Black ash ..... *Fraxinus nigra*
White ash ..... *Fraxinus americana*
Balsam poplar ..... *Populus balsamifera*
Aspen
Bigtooth aspen ..... *Populus grandidentata*
Quaking aspen ..... *Populus tremuloides*
Eastern cottonwood ..... *Populus deltoides*
American basswood ..... *Tilia americana*
Black walnut ..... *Juglans nigra*
Elm
American elm ..... *Ulmus americana*
Rock elm ..... *Ulmus thomasii*
Slippery elm ..... *Ulmus rubra*
Other hardwoods
Sycamore ..... *Platinus occidentalis*
Black cherry ..... *Prunus serotina*
River birch ..... *Betula nigra*
Black locust ..... *Robinia pseudoacacia*
Honeylocust ..... *Gleditsia triacanthos*
Red mulberry ..... *Morus rubra*
Butternut ..... *Juglans cinerea*
Black willow ..... *Salix nigra*
Boxelder ..... *Acer negundo*
Hackberry ..... *Celtis occidentalis*

TABLE TITLES

Table 1.—Number of active primary wood-using mills, Michigan, 1977, 1984, 1988, 1990, and 1992

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Table 21.—Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1992

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Table 1. -- Number of active primary wood-using mills in Michigan, 1977, 1984, 1988, 1990, and 1992

Kind of mill	1977	1984	1988	1990	1992
Sawmills 1/					
Large 2/	20	26	31	26	30
Medium 3/	86	94	117	103	107
Small 4/	196	176	136	171	139
Total	302	296	284	300	276
Pulp mills 5/	8	9	12	12	11
Veneer mills	9	8	8	8	7
Other mills	19	26	32	35	23
Total	36	43	52	55	41
Total mills	338	339	336	355	317

1/ Mills persistently sawing 50 mbf or more annually (38 mills sawed under 50 thousand board feet in 1992).

2/ Annual lumber production in excess of 5 million board feet.

3/ Annual lumber production from 1 million to 5 million board feet.

4/ Annual lumber production from 50 thousand to 1 million board feet.

5/ Includes flake board plants after 1977, formerly reported in "other mills" category.

Table 2. -- Industrial roundwood receipts by mill type, Michigan, 1977, 1984, 1988, 1990, 1992

(In million cubic feet)

Kind of mill	1977	1984	1988	1990	1992
		All species			
Pulp mills 1/	82.4	143.2	205.7	214.4	200.6
Sawmills	78.7	83.2	98.3	107.4	100.1
Other mills 2/	15	4.2	6.4	7.1	28.5
Total	176.1	230.6	310.4	328.9	329.2
		Softwoods			
Pulp mills 1/	28.2	30.4	36.9	41.2	33.1
Sawmills	10.5	10.3	18.5	23.3	22.7
Other mills 2/	3.4	2.3	0.1	0.7	13.1
Total	42.1	43	55.5	65.2	68.8
		Hardwoods			
Pulp mills 1/	54.2	112.8	168.8	173.2	167.5
Sawmills	68.2	72.9	79.8	84.1	77.4
Other mills 2/	11.6	1.9	6.3	6.4	15.4
Total	134	187.6	254.9	263.7	260.4

1/ Includes flakeboard plants after 1977, formerly reported in "other mill" category.

2/ Does not include treating plants, or fuelwood receipts prior to 1992.

Table 3. -- Industrial roundwood production by Forest Survey Unit, species group, and type of product, Michigan, 1992 1/

All Units

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Cabin logs	Excelsior/ shavings	Mine timbers	Miscel- laneous	All products
	MBF 2/	MCF 3/	MBF 2/	MCF 3/	Cords 4/	MCF 3/	Cords 5/	MCF 3/	Pieces	MCF 3/	M pieces	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/
SOFTWOODS																	
Balsam fir	1,195	225	--	--	82,693	6,533	88	6	--	--	--	--	--	--	--	--	6,764
Tamarack	22	4	12	2	7,046	557	128	9	--	--	--	--	--	--	--	--	572
Spruce	1,520	286	139	23	70,260	5,551	13	1	500	3	--	--	13	--	--	--	5,876
Jack pine	14,381	2,708	36	6	280,864	22,188	55,491	3,879	--	--	--	--	--	--	--	--	28,781
Red pine	91,282	15,308	200	33	63,222	4,995	65,239	4,560	28,260	170	11	11	360	--	5	--	25,441
White pine	18,045	3,026	672	109	14,274	1,128	1,910	134	--	--	10	10	142	--	9	--	4,558
Other pine	--	--	--	--	5,046	399	16	1	--	--	--	--	--	--	--	--	400
N. white cedar	10,932	2,058	--	--	6,137	485	281	20	50	*	2,716	2,792	487	--	--	33	5,876
Hemlock	2,888	484	146	24	36,783	2,906	664	46	--	--	--	--	--	--	--	--	3,460
Total	140,266	24,100	1,206	196	566,325	44,740	123,831	8,656	28,810	173	2,737	2,814	1,002	--	15	33	81,729
HARDWOODS																	
Soft maple	54,220	9,521	1,793	292	258,755	20,442	24,974	1,746	--	--	--	--	--	--	2	--	32,002
Hard maple	102,495	16,625	14,476	2,357	327,400	25,865	10,734	750	--	--	--	--	--	--	2	--	45,598
White birch	9,199	1,615	1,496	244	158,664	12,534	312	22	--	--	--	--	--	--	--	--	14,415
Yellow birch	8,289	1,396	1,177	192	24,134	1,907	283	20	--	--	--	--	--	--	--	--	3,514
Hickory	1,115	188	6	1	--	--	--	--	--	--	--	--	--	--	--	--	189
Hackberry	2,008	353	--	--	--	--	--	--	--	--	--	--	--	--	--	--	353
Beech	11,291	1,901	2,842	463	36,878	2,913	322	23	--	--	--	--	--	--	--	--	5,300
Ash	18,498	3,115	1,322	215	25,944	2,050	4,750	332	--	--	--	--	--	--	--	--	5,712
Butternut	203	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	36
Black walnut	2,297	387	324	53	--	--	--	--	--	--	--	--	--	--	--	--	440
Yellow-poplar	1,862	327	27	4	--	--	--	--	--	--	--	--	--	--	--	--	331
Sycamore	852	150	2	*	--	--	--	--	--	--	--	--	--	--	--	--	150
Cottonwood	3,324	584	50	8	63	5	--	--	--	--	--	--	--	--	--	--	597
Balsam poplar	990	174	17	3	75,823	5,990	--	--	--	--	--	--	--	--	--	--	6,167
Aspen	118,592	20,860	6,167	1,004	1,033,106	81,615	44,653	3,121	--	--	--	--	--	327	--	--	106,928
Black cherry	6,141	1,078	574	93	26,733	2,112	147	10	--	--	--	--	--	--	--	--	3,294
Red oak group	104,825	18,397	4,406	717	57,301	4,527	46,750	3,268	--	--	--	--	--	--	--	--	26,909
White oak group	18,831	3,305	1,129	184	25,733	2,033	1,178	82	--	--	--	--	--	--	--	--	5,604
Sassafras	12	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2
Basswood	26,172	4,596	1,120	182	29,086	2,298	--	--	--	--	--	--	--	--	--	--	7,076
Elm	740	130	49	8	3,095	245	--	--	--	--	--	--	--	--	--	--	383
Other hardwoods	157	28	13	2	--	--	--	--	--	--	--	--	--	--	--	--	30
Total	492,112	84,766	36,989	6,022	2,082,714	164,534	134,103	9,374	--	--	--	--	--	327	4	--	265,026
All species	632,378	108,866	38,195	6,218	2,649,039	209,274	257,934	18,030	28,810	173	2,737	2,814	1,002	327	18	33	346,755

1/ Product volumes converted to standard units of measure using regional conversion factors and to thousand cubic feet using factors from the Michigan Utilization Study of 1980 (Table 3 continued on next page.)
and other regional utilization studies.

2/ Thousand board feet, International 1/4-inch rule.

3/ Thousand cubic feet.

4/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

5/ Standard cords are 128 cubic feet consisting of 70 cubic feet of wood and 58 cubic feet of bark and air space.

* *Less than 1/2 unit of measurement.*

(Table 3 continued.)

Eastern Upper Peninsula

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Cabin logs	Excelsior/ shavings	Mine timbers	Miscel- laneous	All products
	MBF 2/	MCF 3/	MBF 2/	MCF 3/	Cords 4/	MCF 3/	Cords 5/	MCF 3/	Pieces	MCF 3/	M pieces	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/
SOFTWOODS																	
Balsam Fir	797	150	--	--	43,843	3,464	--	--	--	--	--	--	--	--	--	--	3,614
Tamarack	--	--	--	--	3,655	289	--	--	--	--	--	--	--	--	--	--	289
Spruce	1,169	220	--	--	25,770	2,036	--	--	--	--	--	--	--	--	--	--	2,256
Jack pine	854	161	--	--	92,530	7,310	--	--	--	--	--	--	--	--	--	--	7,471
Red pine	8,448	1,417	--	--	25,139	1,986	--	--	5,760	35	--	--	186	--	--	--	3,623
White pine	4,679	785	163	26	7,730	611	--	--	--	--	--	--	2	--	--	--	1,424
Other pine	--	--	--	--	3,091	244	--	--	--	--	--	--	--	--	--	--	244
N. white cedar	6,190	1,166	--	--	3,453	273	--	--	--	--	1,576	1,620	423	--	--	--	3,481
Hemlock	413	69	--	--	18,420	1,455	--	--	--	--	--	--	--	--	--	--	1,524
Total	22,550	3,967	163	26	223,632	17,667	--	--	5,760	35	1,576	1,620	611	--	--	--	23,926
HARDWOOD																	
Soft maple	4,339	762	548	89	62,788	4,960	142	10	--	--	--	--	--	--	--	--	5,821
Hard maple	7,942	1,288	2,712	442	93,488	7,386	164	11	--	--	--	--	--	--	--	--	9,127
White birch	3,666	644	606	99	53,203	4,203	--	--	--	--	--	--	--	--	--	--	4,945
Yellow birch	1,255	211	155	25	8,283	654	34	2	--	--	--	--	--	--	--	--	893
Beech	4,166	702	1,917	312	14,786	1,168	61	4	--	--	--	--	--	--	--	--	2,186
Ash	610	103	136	22	4,162	329	--	--	--	--	--	--	--	--	--	--	453
Balsam poplar	166	29	5	1	39,729	3,139	--	--	--	--	--	--	--	--	--	--	3,169
Aspen	7,104	1,250	56	9	199,881	15,791	49	3	--	--	--	--	--	71	--	--	17,124
Black cherry	170	30	11	2	10,358	818	--	--	--	--	--	--	--	--	--	--	850
Red oak group	543	95	102	17	3,399	269	--	--	--	--	--	--	--	--	--	--	380
White oak group	3	1	--	--	68	5	--	--	--	--	--	--	--	--	--	--	6
Basswood	2,472	434	8	1	5,908	467	--	--	--	--	--	--	--	--	--	--	902
Elm	147	26	--	--	720	57	--	--	--	--	--	--	--	--	--	--	83
Total	32,583	5,574	6,257	1,019	496,772	39,245	450	31	--	--	--	--	--	71	--	--	45,940
All species	55,132	9,541	6,419	1,045	720,404	56,912	450	31	5,760	35	1,576	1,620	611	71	--	--	69,866

(Table 3 continued on next page.)

(Table 3 continued.)

Western Upper Peninsula

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Cabin logs	Excelsior/ shavings	Mine timbers	Miscel- laneous	All products
	MBF 2/	MCF 3/	MBF 2/	MCF 3/	Cords 4/	MCF 3/	Cords 5/	MCF 3/	Pieces	MCF 3/	M pieces	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/
SOFTWOODS																	
Balsam Fir	100	19	--	--	36,244	2,863	--	--	--	--	--	--	--	--	--	--	2,882
Tamarack	21	4	12	2	3,391	268	--	--	--	--	--	--	--	--	--	--	274
Spruce	129	24	139	23	43,357	3,425	--	--	--	--	--	--	13	--	--	--	3,485
Jack pine	1,434	270	36	6	93,493	7,386	189	13	--	--	--	--	--	--	--	--	7,675
Red pine	6,025	1,010	200	33	25,235	1,994	--	--	1,620	10	--	--	34	--	5	--	3,086
White pine	7,205	1,208	406	66	5,911	467	--	--	--	--	--	--	1	--	9	--	1,751
N. white cedar	582	110	--	--	2,487	196	--	--	--	--	972	999	19	--	--	5	1,329
Hemlock	1,923	323	146	24	18,344	1,449	--	--	--	--	--	--		--	--	--	1,796
Total	17,419	2,968	939	153	228,462	18,049	189	13	1,620	10	972	999	67	--	15	5	22,277
HARDWOODS																	
Soft maple	12,076	2,121	960	156	105,014	8,296	623	44	--	--	--	--	--	--	2	--	10,618
Hard maple	51,091	8,287	7,018	1,142	206,518	16,315	1,032	72	--	--	--	--	--	--	2	--	25,818
White birch	3,738	656	805	131	71,213	5,626	312	22	--	--	--	--	--	--	--	--	6,435
Yellow birch	6,729	1,133	964	157	15,266	1,206	211	15	--	--	--	--	--	--	--	--	2,511
Beech	327	55	9	1	17,494	1,382	--	--	--	--	--	--	--	--	--	--	1,439
Ash	1,512	255	393	64	13,844	1,094	--	--	--	--	--	--	--	--	--	--	1,412
Butternut	194	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34
Cottonwood	--	--	--	--	63	5	--	--	--	--	--	--	--	--	--	--	5
Balsam poplar	3	*	11	2	32,424	2,561	--	--	--	--	--	--	--	--	--	--	2,564
Aspen	13,583	2,389	5,934	966	366,719	28,971	466	33	--	--	--	--	--	255	--	--	32,614
Black cherry	435	76	26	4	12,849	1,015	42	3	--	--	--	--	--	--	--	--	1,099
Red oak group	4,928	865	1,147	187	10,441	825	--	--	--	--	--	--	--	--	--	--	1,876
White oak group	20	4	15	2	402	32	--	--	--	--	--	--	--	--	--	--	38
Basswood	7,723	1,356	1,089	177	18,139	1,433	--	--	--	--	--	--	--	--	--	--	2,966
Elm	50	9	--	--	2,375	188	--	--	--	--	--	--	--	--	--	--	196
Total	102,410	17,241	18,371	2,991	872,761	68,948	2,686	188	--	--	--	--	--	255	4	--	89,626
All species	119,830	20,208	19,310	3,144	1,101,223	86,997	2,875	201	1,620	10	972	999	67	255	18	5	111,903

(Table 3 continued on next page.)

(Table 3 continued.)

Northern Lower Peninsula

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Cabin logs	Excelsior/ shavings	Mine timbers	Miscel- laneous	All products
	MBF 2/	MCF 3/	MBF 2/	MCF 3/	Cords 4/	MCF 3/	Cords 5/	MCF 3/	Pieces	MCF 3/	M pieces	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/
SOFTWOODS																	
Balsam Fir	298	56	--	--	2,606	206	88	6	--	--	--	--	--	--	--	--	268
Tamarack	1	*	--	--	--	--	128	9	--	--	--	--	--	--	--	--	9
Spruce	223	42	--	--	1,134	90	13	1	500	3	--	--	--	--	--	--	135
Jack pine	12,093	2,277	--	--	94,779	7,488	55,302	3,866	--	--	--	--	--	--	--	--	13,630
Red pine	67,824	11,374	--	--	12,787	1,010	65,239	4,560	18,360	110	11	11	132	--	--	--	17,198
White pine	5,616	942	104	17	632	50	1,910	134	--	--	10	10	139	--	--	--	1,291
Other pine	--	--	--	--	1,955	154	16	1	--	--	--	--	--	--	--	--	156
N. white cedar	4,159	783	--	--	197	16	281	20	50	*	169	174	46	--	--	28	1,067
Hemlock	552	93	--	--	19	1	664	46	--	--	--	--	--	--	--	--	140
Total	90,766	15,567	104	17	114,109	9,015	123,642	8,643	18,910	113	189	195	317	--	--	28	33,895
HARDWOODS																	
Soft maple	24,630	4,325	265	43	84,033	6,639	24,210	1,692	--	--	--	--	--	--	--	--	12,699
Hard maple	36,266	5,882	1,248	203	26,692	2,109	9,538	667	--	--	--	--	--	--	--	--	8,861
White birch	1,682	295	40	6	34,222	2,704	--	--	--	--	--	--	--	--	--	--	3,005
Yellow birch	303	51	58	9	570	45	38	3	--	--	--	--	--	--	--	--	108
Hackberry	75	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13
Beech	5,259	886	816	133	4,405	348	261	18	--	--	--	--	--	--	--	--	1,385
Ash	8,649	1,457	464	75	7,623	602	4,750	332	--	--	--	--	--	--	--	--	2,466
Butternut	3	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1
Black walnut	21	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4
Sycamore	35	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6
Cottonwood	403	71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	71
Balsam poplar	813	143	--	--	3,671	290	--	--	--	--	--	--	--	--	--	--	433
Aspen	92,926	16,346	168	27	459,952	36,336	44,138	3,085	--	--	--	--	--	--	--	--	55,794
Black cherry	1,114	196	145	24	3,358	265	105	3,268	--	--	--	--	--	--	--	--	492
Red oak group	66,489	11,669	1,735	283	30,860	2,438	46,750	7	--	--	--	--	--	--	--	--	17,657
White oak group	6,748	1,184	250	41	13,749	1,086	1,178	82	--	--	--	--	--	--	--	--	2,393
Basswood	13,327	2,340	19	3	5,039	398	--	--	--	--	--	--	--	--	--	--	2,741
Elm	112	20	13	2	--	--	--	--	--	--	--	--	--	--	--	--	22
Other hardwoods	3	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1
Total	258,858	44,888	5,221	850	674,172	53,260	130,967	9,155	--	--	--	--	--	--	--	--	108,152
All species	349,625	60,455	5,325	867	788,281	62,274	254,609	17,797	18,910	113	189	195	317	--	--	28	142,047

(Table 3 continued on next page.)

(Table 3 continued.)

Southern Lower Peninsula

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Cabin logs	Excelsior/ shavings	Mine timbers	Miscel-laneous	All products
	MBF 2/	MCF 3/	MBF 2/	MCF 3/	Cords 4/	MCF 3/	Cords 5/	MCF 3/	Pieces	MCF 3/	M pieces	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/	MCF 3/
SOFTWOODS																	
Jack pine	--	--	--	--	61	5	--	--	--	--	--	--	--	--	--	--	5
Red pine	8,985	1,507	--	--	61	5	--	--	2,520	15	--	--	8	--	--	--	1,534
White pine	545	91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91
Total	9,530	1,598	--	--	122	10	--	--	2,520	15	--	--	8	--	--	--	1,631
HARDWOODS																	
Soft maple	13,175	2,314	19	3	6,920	547	--	--	--	--	--	--	--	--	--	--	2,863
Hard maple	7,195	1,167	3,498	569	701	55	--	--	--	--	--	--	--	--	--	--	1,792
White birch	113	20	46	7	26	2	--	--	--	--	--	--	--	--	--	--	29
Yellow birch	3	1	--	--	14	1	--	--	--	--	--	--	--	--	--	--	2
Hickory	1,115	188	6	1	--	--	--	--	--	--	--	--	--	--	--	--	189
Hackberry	1,933	339	--	--	--	--	--	--	--	--	--	--	--	--	--	--	339
Beech	1,539	259	100	16	193	15	--	--	--	--	--	--	--	--	--	--	291
Ash	7,727	1,301	330	54	316	25	--	--	--	--	--	--	--	--	--	--	1,380
Butternut	6	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1
Black walnut	2,276	383	324	53	--	--	--	--	--	--	--	--	--	--	--	--	436
Yellow-poplar	1,862	327	27	4	--	--	--	--	--	--	--	--	--	--	--	--	331
Sycamore	817	143	2	*	--	--	--	--	--	--	--	--	--	--	--	--	144
Cottonwood	2,921	513	50	8	--	--	--	--	--	--	--	--	--	--	--	--	521
Balsam poplar	8	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1
Aspen	4,979	876	9	1	6,555	518	--	--	--	--	--	--	--	--	--	--	1,395
Black cherry	4,422	776	392	64	168	13	--	--	--	--	--	--	--	--	--	--	854
Red oak group	32,865	5,768	1,421	231	12,601	995	--	--	--	--	--	--	--	--	--	--	6,995
White oak group	12,061	2,117	863	141	11,515	910	--	--	--	--	--	--	--	--	--	--	3,167
Sassafras	12	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2
Basswood	2,650	465	3	1	--	--	--	--	--	--	--	--	--	--	--	--	466
Elm	431	76	36	6	--	--	--	--	--	--	--	--	--	--	--	--	82
Other hardwoods	154	27	13	2	--	--	--	--	--	--	--	--	--	--	--	--	29
Total	98,261	17,064	7,140	1,162	39,009	3,082	--	--	--	--	--	--	--	--	--	--	21,308
All species	107,791	18,662	7,140	1,162	39,131	3,091	--	--	2,520	15	--	--	8	--	--	--	22,939

Table 4. -- Wood material harvested for industrial roundwood by Forest Survey Unit, source of material, and species group, Michigan, 1992 1/

(In thousand cubic feet)

All Units

Species group	Growing stock: Used for products: Sawtimber	Growing stock: Used for products: Pole-timber	Growing stock: Logging residue	Growing stock: Total growing stock	Non-growing stock: Used for products: Limbwood	Saplings	Cull trees	Dead trees	Logging slash	Total non-growing stock	Total material used for products	Total material not used	Total material harvested
SOFTWOODS													
Balsam fir	4,763.6	1,661.4	291.3	6,716.3	214.9	72.7	17.2	34.1	1,667.5	2,006.4	6,763.9	1,958.7	8,722.6
Tamarack	396.1	146.5	24.0	566.6	18.4	6.4	2.1	2.2	140.7	169.8	571.7	164.8	736.5
Spruce	4,171.9	1,427.0	266.4	5,865.3	168.2	62.6	17.2	29.2	1,476.5	1,753.7	5,876.0	1,742.9	7,619.0
Jack pine	15,695.0	7,884.2	758.6	24,337.7	3,588.3	318.6	373.8	921.0	5,107.6	10,309.5	28,781.0	5,866.2	34,647.2
Red pine	18,917.7	3,240.2	830.0	22,987.9	2,360.7	132.0	509.7	280.9	5,980.4	9,263.8	25,441.3	6,810.5	32,251.7
White pine	3,767.7	446.6	183.8	4,398.0	182.2	26.4	73.2	62.4	1,255.8	1,599.9	4,558.3	1,439.6	5,997.9
Other pine	267.7	20.5	--	288.2	98.3	--	0.1	13.1	--	111.5	399.8	--	399.8
N. white cedar	3,411.2	2,042.6	646.2	6,100.1	173.6	147.4	43.5	57.8	1,021.8	1,444.2	5,876.3	1,668.0	7,544.3
Hemlock	1,994.4	966.5	115.8	3,076.8	188.7	70.0	155.6	85.3	1,016.2	1,515.7	3,460.5	1,132.1	4,592.5
Total	53,385.3	17,835.4	3,116.2	74,336.9	6,993.5	836.2	1,192.4	1,486.0	17,666.6	28,174.6	81,728.8	20,782.8	102,511.5
HARDWOODS													
Soft maple	15,987.9	11,486.7	2,538.0	30,012.7	2,536.0	201.5	1,483.9	306.0	4,020.5	8,547.9	32,002.1	6,558.5	38,560.6
Hard maple	28,349.9	6,425.0	4,017.0	38,791.9	3,362.7	99.4	7,329.7	31.5	11,975.9	22,799.2	45,598.1	15,993.0	61,591.1
White birch	5,806.4	6,411.4	989.0	13,206.8	1,038.8	80.2	889.3	188.9	1,997.6	4,194.9	14,415.1	2,986.6	17,401.7
Yellow birch	2,261.1	455.4	296.5	3,012.9	231.5	6.5	557.5	2.1	907.1	1,704.6	3,513.9	1,203.6	4,717.5
Hickory	178.6	2.9	22.2	203.7	3.9	--	3.2	--	33.7	40.8	188.6	55.9	244.5
Hackberry	332.5	13.7	53.4	399.6	4.4	--	2.0	--	52.8	59.2	352.6	106.2	458.8
Beech	3,406.3	656.1	458.6	4,521.0	344.3	6.7	884.3	2.1	1,413.7	2,651.2	5,299.9	1,872.3	7,172.2
Ash	3,971.9	732.6	494.5	5,199.0	412.1	19.6	569.6	6.0	1,170.3	2,177.6	5,711.8	1,664.8	7,376.6
Butternut	33.6	1.4	5.4	40.4	0.4	--	0.2	--	5.3	6.0	35.6	10.7	46.4
Black walnut	413.8	6.0	54.3	474.1	8.1	--	11.6	--	82.3	102.1	439.5	136.7	576.2
Yellow-poplar	312.3	12.7	50.3	375.2	4.1	--	2.3	--	50.1	56.5	331.3	100.4	431.7
Sycamore	141.4	5.8	22.7	169.9	1.9	--	0.9	--	22.5	25.3	149.9	45.2	195.1
Cottonwood	559.0	25.5	89.9	674.4	7.8	0.1	4.3	0.1	89.8	102.2	596.9	179.8	776.6
Balsam poplar	2,179.4	2,976.9	387.1	5,543.3	465.8	22.5	431.2	90.8	894.4	1,904.6	6,166.5	1,281.4	7,447.9
Aspen	51,050.4	47,660.9	4,763.4	103,474.7	4,370.9	159.2	3,001.7	684.6	16,332.7	24,549.2	106,927.7	21,096.2	128,023.8
Black cherry	1,806.0	1,098.1	303.7	3,207.8	183.1	9.5	165.3	31.9	485.4	875.3	3,293.9	789.1	4,083.0
Red oak group	18,706.1	4,583.1	1,942.4	25,231.6	2,318.9	116.6	773.0	410.9	2,731.5	6,350.9	26,908.7	4,673.8	31,582.5
White oak group	3,476.4	1,453.7	372.0	5,302.1	364.4	57.2	152.2	100.0	563.5	1,237.3	5,603.9	935.5	6,539.4
Sassafras	2.1	0.1	0.3	2.5	--	--	--	--	0.3	0.4	2.2	0.7	2.8
Basswood	5,155.7	1,412.0	827.3	7,395.1	265.0	33.3	175.8	34.0	976.8	1,484.9	7,075.8	1,804.1	8,880.0
Elm	213.4	125.1	36.2	374.7	20.2	0.6	19.5	3.7	58.0	102.1	382.5	94.2	476.8
Other hardwoods	27.8	1.1	4.5	33.4	0.3	--	0.4	--	4.6	5.4	29.6	9.2	38.8
Total	144,371.9	85,546.0	17,728.9	247,646.8	15,944.9	812.9	16,457.9	1,892.6	43,869.0	78,977.4	265,026.3	61,597.9	326,624.3
All species	197,757.3	103,381.5	20,845.0	321,983.8	22,938.4	1,649.1	17,650.3	3,378.6	61,535.6	107,152.0	346,755.1	82,380.7	429,135.8

1/ Based on factors obtained from the Michigan Utilization Study of 1980 and other regional utilization studies.

Eastern Upper Peninsula

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products				Used for products								
	Sawtimber	Pole-timber	Logging residue	Total growing stock	Limbwood	Saplings	Cull trees	Dead trees	Logging slash	Total non-growing stock			
SOFTWOODS													
Balsam fir	2,555.0	891.4	160.0	3,606.5	101.8	39.2	9.2	17.2	907.7	1,075.1	3,613.8	1,067.8	4,681.5
Tamarack	201.4	74.6	12.1	288.0	7.7	3.3	0.7	1.1	72.0	84.8	288.7	84.1	372.8
Spruce	1,624.3	523.8	108.0	2,256.2	65.7	22.9	5.8	13.3	575.2	682.9	2,255.8	683.2	2,939.0
Jack pine	3,925.1	2,713.7	211.9	6,850.7	337.5	129.5	65.3	299.6	1,821.4	2,653.3	7,470.6	2,033.3	9,503.9
Red pine	2,597.8	661.5	131.9	3,391.2	146.1	46.7	101.3	69.9	1,041.6	1,405.5	3,623.2	1,173.6	4,796.8
White pine	1,095.7	206.2	55.6	1,357.5	50.8	14.2	33.3	24.1	410.1	532.6	1,424.3	465.7	1,890.0
Other pine	163.8	12.4	--	176.2	60.0	--	--	8.0	--	68.0	244.2	--	244.2
N. white cedar	2,063.2	1,174.0	384.0	3,621.2	97.3	85.5	25.0	35.7	630.0	873.4	3,480.7	1,014.0	4,494.7
Hemlock	816.1	474.4	48.9	1,339.4	82.3	35.0	75.5	41.1	456.3	690.2	1,524.5	505.2	2,029.7
Total	15,042.3	6,732.1	1,112.4	22,886.9	949.1	376.3	316.0	510.1	5,914.4	8,065.8	23,925.8	7,026.8	30,952.6
HARDWOODS													
Soft maple	2,442.4	2,513.3	420.3	5,376.0	404.2	24.2	362.1	75.0	834.9	1,700.4	5,821.2	1,255.2	7,076.4
Hard maple	4,707.7	1,451.0	667.3	6,826.0	778.2	3.1	2,185.9	1.0	2,896.6	5,864.8	9,126.8	3,563.9	12,690.8
White birch	2,107.7	2,109.6	366.7	4,584.0	333.8	15.9	314.8	63.7	729.8	1,458.0	4,945.5	1,096.5	6,042.0
Yellow birch	498.5	127.4	66.4	692.2	70.8	--	196.6	--	271.0	538.5	893.3	337.4	1,230.7
Beech	1,434.7	237.1	201.0	1,872.8	133.9	0.5	379.7	0.1	606.1	1,120.3	2,186.0	807.1	2,993.0
Ash	253.8	66.2	34.2	354.1	35.2	0.2	98.0	0.1	136.0	269.5	453.5	170.2	623.7
Balsam poplar	1,100.5	1,543.0	199.1	2,842.6	238.9	8.1	230.5	47.7	473.0	998.1	3,168.6	672.0	3,840.7
Aspen	7,343.1	8,760.1	719.0	16,822.1	352.1	3.9	542.5	122.4	2,919.2	3,940.2	17,124.2	3,638.1	20,762.3
Black cherry	309.6	403.0	55.6	768.2	62.5	2.1	60.4	12.4	127.2	264.6	850.0	182.8	1,032.8
Red oak group	144.8	172.4	20.9	338.1	33.5	1.8	16.7	11.3	54.3	117.6	380.5	75.2	455.7
White oak group	1.4	3.4	0.2	5.0	0.6	--	0.3	0.2	0.8	2.0	5.9	1.1	6.9
Basswood	566.3	249.2	93.7	909.1	41.9	2.0	35.8	7.1	132.1	218.7	902.1	225.7	1,127.9
Elm	43.8	29.0	7.4	80.2	4.6	0.1	4.3	0.9	12.4	22.3	82.7	19.8	102.5
Total	20,954.0	17,664.7	2,851.7	41,470.4	2,490.1	62.0	4,427.6	341.8	9,193.4	16,515.0	45,940.3	12,045.1	57,985.4
All species	35,996.4	24,396.8	3,964.1	64,357.3	3,439.2	438.2	4,743.7	851.9	15,107.8	24,580.8	69,866.1	19,071.9	88,938.0

Western Upper Peninsula

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products				Used for products								
	Sawtimber	Pole-timber	Logging residue	Total growing stock	Limbwood	Saplings	Cull trees	Dead trees	Logging slash	Total non-growing stock			
SOFTWOODS													
Balsam fir	2,014.6	739.7	121.7	2,875.9	76.6	32.6	7.3	11.3	720.3	848.2	2,882.1	842.0	3,724.1
Tamarack	192.4	69.2	12.0	273.6	7.2	3.1	0.9	1.1	68.7	80.9	273.9	80.6	354.5
Spruce	2,443.8	885.1	150.9	3,479.8	92.1	39.0	11.0	13.8	872.3	1,028.3	3,484.8	1,023.3	4,508.0
Jack pine	4,074.8	2,747.6	226.9	7,049.3	349.1	130.9	67.6	305.1	1,878.0	2,730.7	7,675.2	2,104.9	9,780.1
Red pine	2,069.7	666.5	113.0	2,849.1	128.5	47.9	106.9	66.2	906.7	1,256.4	3,085.8	1,019.7	4,105.5
Whité pine	1,464.6	172.2	75.8	1,712.6	46.3	11.2	30.8	26.1	505.0	619.6	1,751.3	580.9	2,332.2
N. white cedar	501.8	720.5	145.8	1,368.0	37.3	53.1	12.8	3.5	110.0	216.6	1,328.9	255.7	1,584.6
Hemlock	1,077.1	476.6	63.1	1,616.9	86.1	34.9	77.5	43.2	533.3	775.1	1,795.5	596.5	2,392.0
Total	13,838.7	6,477.4	909.1	21,225.3	823.4	352.7	314.8	470.4	5,594.4	7,555.7	22,277.4	6,503.5	28,781.0
HARDWOODS													
Soft maple	4,911.5	4,233.3	837.2	9,981.9	693.9	37.7	616.5	125.5	1,536.1	3,009.7	10,618.4	2,373.3	12,991.6
Hard maple	15,397.0	3,878.1	2,177.1	21,452.2	1,905.1	60.0	4,559.0	19.3	7,057.7	13,601.1	25,818.4	9,234.8	35,053.3
White birch	2,624.3	2,828.7	457.0	5,910.0	454.8	23.1	419.0	85.2	939.7	1,921.7	6,435.0	1,396.6	7,831.7
Yellow birch	1,686.8	315.1	220.2	2,222.0	153.7	6.2	347.1	2.0	610.4	1,119.5	2,510.9	830.6	3,341.5
Beech	634.2	261.5	85.4	981.2	139.4	--	403.4	--	489.5	1,032.3	1,438.5	574.9	2,013.5
Ash	669.3	363.0	84.0	1,116.3	122.8	14.3	238.1	4.6	325.3	705.3	1,412.2	409.4	1,821.6
Butternut	32.2	1.3	5.2	38.7	0.4	--	0.2	--	5.1	5.7	34.1	10.3	44.4
Cottonwood	1.1	2.9	0.1	4.1	0.5	0.1	0.2	0.1	0.3	1.2	4.9	0.4	5.4
Balsam poplar	845.4	1,284.6	148.7	2,278.6	202.8	13.4	179.0	38.7	357.7	791.5	2,563.8	506.3	3,070.1
Aspen	14,343.1	15,913.0	1,406.4	31,662.5	1,024.5	49.5	1,047.7	236.2	5,089.1	7,447.0	32,614.0	6,495.5	39,109.5
Black cherry	423.5	502.4	75.2	1,001.1	79.2	2.6	75.5	15.4	164.1	336.9	1,098.6	239.4	1,338.0
Red oak group	1,079.5	554.4	136.9	1,770.8	119.2	10.1	72.2	41.1	251.9	494.4	1,876.5	388.8	2,265.2
White oak group	10.6	20.1	1.8	32.5	3.8	0.2	1.9	1.2	5.7	12.7	37.7	7.5	45.2
Basswood	1,838.1	830.8	294.5	2,963.4	149.2	23.0	104.2	21.2	390.9	688.4	2,966.4	685.4	3,651.8
Elm	72.5	92.5	13.0	177.9	14.4	0.5	13.8	2.8	29.4	60.9	196.5	42.3	238.8
Total	44,569.0	31,081.7	5,942.7	81,593.4	5,063.5	240.7	8,077.8	593.4	17,252.8	31,228.1	89,626.0	23,195.5	112,821.6
All species	58,407.7	37,559.1	6,851.9	102,818.7	5,886.9	593.4	8,392.7	1,063.7	22,847.2	38,783.9	111,903.5	29,699.0	141,602.5

Northern Lower Peninsula

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products				Used for products								
	Sawtimber	Pole-timber	Logging residue	Total growing stock	Limbwood	Saplings	Cull trees	Dead trees	Logging slash	Total non-growing stock			
SOFTWOODS													
Balsam fir	194.1	30.3	9.6	233.9	36.5	1.0	0.7	5.6	39.4	83.1	268.1	49.0	317.0
Tamarack	2.4	2.7	--	5.1	3.5	--	0.5	--	0.1	4.1	9.1	0.1	9.2
Spruce	103.8	18.1	7.5	129.3	10.4	0.7	0.4	2.1	29.0	42.6	135.4	36.5	171.9
Jack pine	7,692.6	2,421.1	319.7	10,433.3	2,901.5	58.1	240.9	316.2	1,407.1	4,923.8	13,630.3	1,726.8	15,357.1
Red pine	12,782.6	1,885.3	520.7	15,188.5	2,060.5	37.3	301.0	131.2	3,596.2	6,126.2	17,197.9	4,116.8	21,314.7
White pine	1,119.8	66.7	48.6	1,235.1	83.6	0.9	9.0	11.3	314.4	419.2	1,291.3	363.0	1,654.3
Other pine	103.9	8.2	--	112.0	38.4	--	0.1	5.1	--	43.5	155.6	--	155.6
N. white cedar	846.3	148.1	116.4	1,110.9	39.0	8.9	5.8	18.6	281.9	354.2	1,066.7	398.3	1,465.1
Hemlock	101.2	15.4	3.8	120.5	20.3	0.1	2.5	0.9	26.6	50.4	140.5	30.4	170.9
Total	22,946.6	4,595.8	1,026.2	28,568.5	5,193.7	107.0	561.0	490.9	5,694.6	12,047.1	33,894.9	6,720.8	40,615.7
HARDWOODS													
Soft maple	6,345.5	4,313.5	923.0	11,582.0	1,346.3	120.4	475.5	97.8	1,286.2	3,326.2	12,699.0	2,209.2	14,908.2
Hard maple	6,611.2	1,049.2	915.8	8,576.2	642.5	34.8	512.6	10.7	1,645.7	2,846.3	8,861.0	2,561.5	11,422.5
White birch	1,048.3	1,471.3	160.9	2,680.4	249.8	41.2	154.6	40.0	323.0	808.6	3,005.2	483.9	3,489.1
Yellow birch	74.9	12.7	9.8	97.4	6.8	0.3	13.5	0.1	25.2	45.7	108.2	35.0	143.1
Hackberry	12.5	0.5	2.0	15.0	0.2	--	0.1	--	2.0	2.2	13.2	4.0	17.2
Beech	1,073.8	145.5	138.8	1,358.0	63.9	5.8	93.9	1.8	266.3	431.7	1,384.7	405.1	1,789.8
Ash	1,763.1	269.1	214.1	2,246.2	224.0	4.1	204.9	1.0	462.0	896.1	2,466.2	676.1	3,142.3
Butternut	0.5	--	0.1	0.6	--	--	--	--	0.1	0.1	0.5	0.2	0.7
Black walnut	3.4	0.1	0.4	3.9	0.1	--	0.1	--	0.6	0.8	3.6	1.1	4.7
Sycamore	5.8	0.2	0.9	7.0	0.1	--	--	--	0.9	1.0	6.1	1.9	8.0
Cottonwood	66.8	2.7	10.7	80.3	0.9	--	0.4	--	10.6	11.9	70.8	21.3	92.2
Balsam poplar	232.2	149.2	39.1	420.6	24.2	1.1	21.7	4.4	63.5	114.8	432.7	102.6	535.4
Aspen	28,439.1	22,591.4	2,549.6	53,580.1	2,948.3	102.9	1,392.5	320.2	8,110.0	12,873.9	55,794.5	10,659.6	66,454.1
Black cherry	280.9	154.3	44.4	479.6	29.9	4.4	18.3	3.9	61.3	117.9	491.7	105.7	597.4
Red oak group	11,936.9	2,987.6	1,196.5	16,121.1	1,892.0	65.7	524.5	250.3	1,661.0	4,393.5	17,657.0	2,857.5	20,514.6
White oak group	1,296.1	759.4	144.6	2,200.2	191.8	19.3	75.6	51.2	261.7	599.6	2,393.5	406.3	2,799.8
Basswood	2,312.0	314.0	368.6	2,994.6	68.2	8.3	33.1	5.8	384.0	499.4	2,741.4	752.6	3,494.0
Elm	20.4	0.8	3.3	24.5	0.2	--	0.3	--	3.5	4.0	21.7	6.8	28.5
Other hardwoods	0.6	--	0.1	0.7	--	--	--	--	0.1	0.1	0.6	0.2	0.8
Total	61,524.0	34,221.6	6,722.8	102,468.4	7,689.2	408.2	3,521.6	787.2	14,567.8	26,974.0	108,151.8	21,290.6	129,442.4
All species	84,470.6	38,817.4	7,749.0	131,036.9	12,882.9	515.2	4,082.6	1,278.0	20,262.4	39,021.1	142,046.7	28,011.4	170,058.0

Southern Lower Peninsula

Species group	Growing stock: Used for products: Sawtimber	Growing stock: Used for products: Pole-timber	Growing stock: Logging residue	Growing stock: Total growing stock	Non-growing stock: Used for products: Limbwood	Non-growing stock: Used for products: Saplings	Non-growing stock: Used for products: Cull trees	Non-growing stock: Used for products: Dead trees	Non-growing stock: Logging slash	Non-growing stock: Total non-growing stock	Total material used for products	Total material not used	Total material harvested
SOFTWOODS													
Jack pine	2.5	1.8	0.1	4.4	0.2	0.1	--	0.2	1.2	1.7	4.8	1.3	6.1
Red pine	1,467.6	27.0	64.5	1,559.1	25.6	0.1	0.5	13.7	435.8	475.7	1,534.4	500.3	2,034.8
White pine	87.6	1.5	3.8	92.8	1.5	--	--	0.8	26.2	28.6	91.4	30.0	121.4
Total	1,557.7	30.2	68.4	1,656.3	27.3	0.2	0.5	14.7	463.2	506.0	1,630.7	531.6	2,162.3
HARDWOODS													
Soft maple	2,288.5	426.6	357.6	3,072.8	91.7	19.2	29.7	7.7	363.3	511.6	2,863.5	720.9	3,584.3
Hard maple	1,634.0	46.7	256.7	1,937.4	36.9	1.5	72.3	0.5	375.9	487.1	1,791.9	632.7	2,424.6
White birch	26.1	1.8	4.4	32.3	0.4	--	1.0	--	5.2	6.6	29.4	9.5	38.9
Yellow birch	0.9	0.2	0.1	1.3	0.1	--	0.3	--	0.5	0.9	1.6	0.6	2.2
Hickory	178.6	2.9	22.2	203.7	3.9	--	3.2	--	33.7	40.8	188.6	55.9	244.5
Hackberry	320.0	13.1	51.4	384.6	4.3	--	1.9	--	50.8	57.0	339.4	102.2	441.6
Beech	263.6	11.9	33.5	309.0	7.2	0.5	7.3	0.2	51.8	66.9	290.7	85.2	375.9
Ash	1,285.7	34.4	162.3	1,482.3	30.1	0.9	28.5	0.3	246.9	306.7	1,379.9	409.2	1,789.1
Butternut	0.9	--	0.1	1.1	--	--	--	--	0.1	0.2	1.0	0.3	1.3
Black walnut	410.4	5.9	53.9	470.2	8.1	--	11.5	--	81.7	101.3	435.9	135.6	571.5
Yellow-poplar	312.3	12.7	50.3	375.2	4.1	--	2.3	--	50.1	56.5	331.3	100.4	431.7
Sycamore	135.6	5.6	21.8	162.9	1.8	--	0.9	--	21.6	24.2	143.8	43.4	187.1
Cottonwood	491.1	19.9	79.1	590.0	6.4	--	3.7	--	78.9	89.1	521.1	158.0	679.1
Balsam poplar	1.3	0.1	0.2	1.6	--	--	--	--	0.2	0.2	1.4	0.4	1.8
Aspen	925.1	396.3	88.4	1,409.9	46.1	2.8	19.0	5.7	214.5	288.1	1,395.0	302.9	1,698.0
Black cherry	792.0	38.4	128.5	958.9	11.4	0.5	11.0	0.2	132.8	155.9	853.5	261.3	1,114.8
Red oak group	5,544.9	868.7	588.1	7,001.6	274.2	39.0	159.7	108.2	764.2	1,345.4	6,994.7	1,352.3	8,347.0
White oak group	2,168.3	670.8	225.3	3,064.5	168.2	37.6	74.5	47.4	295.3	623.0	3,166.9	520.7	3,687.5
Sassafras	2.1	0.1	0.3	2.5	--	--	--	--	0.3	0.4	2.2	0.7	2.8
Basswood	439.3	18.0	70.6	527.9	5.8	--	2.7	--	69.8	78.4	465.9	140.4	606.3
Elm	76.7	2.9	12.5	92.1	1.0	--	1.0	--	12.8	14.8	81.6	25.3	106.9
Other hardwoods	27.3	1.0	4.4	32.7	0.3	--	0.4	--	4.6	5.3	29.0	9.0	38.0
Total	17,324.9	2,578.1	2,211.7	22,114.6	702.1	102.0	430.9	170.3	2,855.1	4,260.3	21,308.2	5,066.8	26,374.9
All species	18,882.6	2,608.3	2,280.0	23,770.9	729.4	102.2	431.4	184.9	3,318.3	4,766.3	22,938.9	5,598.3	28,537.2

Table 5. -- Pulpwood production by species group, Michigan, 1946-1992

(In thousand standard cords, unpeeled) 1/

Year	Total	Roundwood								Residue	
		Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Softwoods	Hardwood
1946	845	85	117	250	127	3	246	9	8	--	
1947	679	86	139	149	134	2	153	6	10	--	
1948	728	89	163	132	133	2	182	7	19	--	
1949	519	38	124	62	97	*	168	5	25	--	
1950	657	66	123	84	99	*	251	6	28	--	
1951	935	103	140	169	110	*	371	8	34	--	
1952	762	58	153	125	120	*	275	8	23	--	
1953	724	67	102	71	81	*	365	5	33	--	
1954	797	43	137	62	119	1	404	5	26	--	
1955	808	38	122	36	111	*	459	4	38	--	
1956	966	67	119	88	115	*	537	4	36	--	
1957	980	70	147	61	118	*	521	7	56	--	
1958	900	149	115	35	86	1	434	1	79	--	
1959	1,053	197	109	39	83	3	523	4	90	1	
1960	1,237	188	135	46	108	5	669	9	75	--	
1961	1,106	156	115	44	96	4	558	16	96	2	1
1962	1,223	184	104	57	86	4	601	21	144	2	2
1963	1,297	174	121	62	88	3	662	23	131	4	2
1964	1,322	198	85	59	72	3	674	38	146	5	4
1965	1,365	224	74	64	65	2	704	32	149	5	4
1966	1,571	251	88	99	74	1	777	12	194	4	7
1967	1,344	193	90	60	75	1	646	11	200	3	6
1968	1,168	205	62	45	39	2	540	13	172	6	8
1969	1,302	207	44	63	39	2	606	23	196	8	11
1970	1,406	239	67	69	51	3	596	33	196	10	14
1971	1,267	235	53	43	45	2	548	23	196	13	10
1972	1,401	229	60	50	38	7	529	36	309	21	12
1973	1,585	204	68	58	46	5	603	59	365	28	14
1974	1,843	259	74	52	40	7	706	85	424	17	17
1975	1,280	235	74	50	45	5	436	36	217	22	16
1976	1,541	281	75	79	32	6	491	69	320	24	16
1977	1,595	262	94	62	48	10	532	62	333	21	17
1978	1,675	277	87	48	42	8	586	90	390	17	13
1979 2/	1,981	350	85	45	39	10	709	109	456	15	16
1980	1,969	268	109	58	58	13	705	104	501	15	13
1981	1,838	237	104	39	45	17	652	105	473	15	15
1982	1,751	262	105	56	68	22	632	89	396	13	10
1983	2,157	256	101	48	78	31	889	130	451	21	15
1984	2,398	293	78	47	77	24	962	120	607	23	16
1985	2,376	314	93	37	84	53	977	110	545	17	14
1986	2,807	315	96	43	93	56	979	221	812	53	13
1987	2,746	292	98	39	97	68	896	228	799	72	15
1988	2,919	298	118	35	93	36	1,009	259	826	69	17
1989	3,114	254	143	42	115	44	1,104	280	871	79	18
1990	2,982	300	86	56	66	14	1,115	228	851	84	18
1991	3,016	309	103	47	64	16	1,093	188	942	76	17
1992	2,877	363	83	37	70	13	1,033	183	867	74	15

* *Less than 500 cords.*

1/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

Table 6. -- Pulpwood production by species group and destination, Michigan, 1992

(In thousand standard cords, unpeeled) 1/

Class of material and species group	Total	Michigan	Minnesota	Wisconsin	Canada
ROUNDWOOD					
SOFTWOODS					
Cedar	6	6	--	--	--
Balsam fir	83	67	2	6	8
Hemlock	37	34	--	3	--
Jack pine	286	211	--	75	--
Red pine	63	55	--	8	--
White pine	14	14	--	*	--
Spruce	70	13	1	45	11
Tamarack	7	6	--	1	--
Total	566	407	3	138	18
HARDWOODS					
Ash	26	24	--	2	--
Aspen	1,033	909	--	124	--
Balsam poplar	76	76	--	*	--
Basswood	29	27	--	2	--
Beech	37	37	--	*	--
White birch	159	155	--	3	--
Yellow birch	24	20	--	5	--
Cottonwood	*	--	--	*	--
Elm	3	2	--	1	--
Hard maple	327	301	--	26	--
Soft maple	259	248	--	11	--
Red oak	57	56	--	2	--
White oak	26	25	--	*	--
Other hardwoods	27	26	--	1	--
Total	2,083	1,905	--	177	--
Total roundwood	2,649	2,312	3	316	18
RESIDUES 2/					
Softwood	74	70	--	3	--
Hardwood	154	150	--	4	--
Total	228	220	--	8	--
ALL MATERIAL	2,877	2,532	3	323	18

* *Less than 500 cords.*

1/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

Table 7. -- Pulpwood production from roundwood by species group, Forest Survey Unit, and county, Michigan, 1992

(In standard cords, unpeeled)

Unit and county 1/	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
E. UPPER PENINSULA												
Alger	98,199	609	6,815	3,164	10,057	3,975	1,324	1,913	582	818	16,495	3,704
Chippewa	97,567	374	4,779	2,090	19,626	2,816	883	3,439	366	240	35,538	9,717
Delta	141,829	619	7,414	3,623	18,136	4,568	1,359	4,220	660	875	41,865	4,366
Luce	64,252	286	4,008	1,572	9,265	1,883	627	2,724	276	317	17,441	5,824
Mackinac	88,516	288	4,864	1,534	6,243	1,891	715	4,707	259	434	25,531	9,165
Menominee	110,065	345	5,250	1,922	7,344	3,025	768	4,372	542	828	41,364	3,360
Schoolcraft	119,975	932	10,712	4,515	24,952	6,981	2,054	4,395	970	649	21,647	3,592
Total	720,404	3,453	43,843	18,420	95,622	25,139	7,730	25,770	3,655	4,162	199,881	39,729
W. UPPER PENINSULA												
Baraga	79,896	116	1,389	710	6,032	1,082	259	973	128	1,496	27,433	2,442
Dickinson	165,224	637	7,748	3,488	15,810	6,627	1,433	7,035	851	604	74,793	4,908
Gogebic	64,791	--	1,045	735	1,239	925	58	1,207	36	1,148	20,309	757
Houghton	98,445	109	2,887	853	7,366	1,686	241	3,625	199	968	25,380	3,933
Iron	157,561	85	4,362	959	3,980	1,421	332	10,192	237	1,524	45,704	3,687
Keweenaw	9,988	--	10	--	52	2,290	207	240	--	74	1,679	--
Marquette	350,780	1,540	17,802	11,121	55,615	10,271	3,380	17,203	1,877	2,216	85,767	11,473
Ontonagon	174,538	--	1,001	478	3,400	933	--	2,881	64	5,813	85,653	5,223
Total	1,101,223	2,487	36,244	18,344	93,493	25,235	5,911	43,357	3,391	13,844	366,719	32,424
N. LOWER PENINSULA												
Alcona	48,162	8	60	1	3,727	256	36	15	--	999	32,478	1,060
Alpena	24,301	--	--	--	260	48	--	--	--	421	18,530	640
Antrim	5,944	--	--	--	674	252	4	--	--	57	3,867	9
Arenac	16,124	--	--	--	175	79	--	--	--	495	11,463	77
Bay	399	--	--	--	--	--	--	--	--	--	124	--
Benzie	3,803	--	--	--	--	--	--	--	--	32	2,787	--
Charlevoix	6,952	--	--	--	42	76	--	--	--	87	1,951	--
Cheboygan	56,791	85	1,218	8	6,686	859	57	553	--	431	31,041	200
Clare	34,451	--	--	--	1,508	160	7	--	--	152	24,520	--
Crawford	31,236	--	--	--	14,193	337	127	--	--	36	9,655	--
Emmet	16,748	43	343	4	95	156	--	83	--	65	8,862	--
Gladwin	26,112	--	--	--	547	23	--	--	--	13	21,326	5
Grand Traverse	11,455	--	--	--	2,058	1,209	--	--	--	71	4,639	19
Iosco	13,784	--	--	--	289	611	--	--	--	195	9,530	126
Isabella	12,535	--	--	--	394	237	--	--	--	--	10,764	--
Kalkaska	25,314	--	--	--	8,461	1,904	80	--	--	33	10,403	--
Lake	35,435	--	--	--	3,788	11	--	--	--	264	18,703	--
Leelanau	2,255	--	--	--	--	--	--	--	--	--	1,229	--
Manistee	21,674	--	--	--	22	268	--	--	--	264	8,953	--
Mason	17,878	--	--	--	22	43	--	--	--	118	12,465	--
Mecosta	18,405	--	--	--	37	42	--	--	--	476	14,055	--
Midland	9,895	--	--	--	--	--	--	--	--	59	8,359	10
Missaukee	34,876	--	--	--	822	1,434	--	--	--	205	23,623	--
Montmorency	36,470	3	26	--	4,344	388	37	6	--	509	23,538	200
Newaygo	29,937	--	--	--	133	44	--	--	--	189	20,928	--
Oceana	11,463	--	--	--	--	--	--	--	--	74	7,170	--
Ogemaw	18,464	--	--	--	747	10	--	--	--	191	11,834	173
Osceola	32,152	--	--	--	46	183	--	--	--	393	23,653	--
Oscoda	44,515	--	--	--	25,032	1,563	160	--	--	336	12,158	248
Otsego	49,342	--	--	--	9,871	786	68	--	--	415	19,927	80
Presque Isle	45,795	58	959	5	5,642	59	51	477	--	869	24,541	790
Roscommon	27,377	--	--	--	6,408	350	5	--	--	51	15,815	31
Wexford	18,240	--	--	--	712	1,403	--	--	--	123	11,062	--
Total	788,281	197	2,606	19	96,734	12,787	632	1,134	--	7,623	459,952	3,671

1/ Includes only those counties that supplied pulpwood in 1992.

(Table 7 continued on next page.)

(Table 7 continued)

Unit and county 1/	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
S. LOWER PENINSULA												
Allegan	13,368	--	--	--	--	--	--	--	--	--	2,104	--
Barry	721	--	--	--	--	--	--	--	--	--	656	--
Calhoun	667	--	--	--	--	--	--	--	--	--	--	--
Cass	1,462	--	--	--	--	--	--	--	--	--	--	--
Gratiot	21	--	--	--	--	--	--	--	--	--	21	--
Ionia	1,051	--	--	--	--	--	--	--	--	106	2	--
Kent	2,511	--	--	--	--	--	--	--	--	1	171	--
Lenawee	273	--	--	--	--	--	--	--	--	--	100	--
Montcalm	6,339	--	--	--	61	61	--	--	--	166	1,903	--
Muskegon	6,966	--	--	--	--	--	--	--	--	43	1,367	--
Ottawa	506	--	--	--	--	--	--	--	--	--	231	--
St. Joseph	2,623	--	--	--	--	--	--	--	--	--	--	--
Van Buren	2,623	--	--	--	--	--	--	--	--	--	--	--
Total	39,131	--	--	--	61	61	--	--	--	316	6,555	--
State total	2,649,039	6,137	82,693	36,783	285,910	63,222	14,274	70,260	7,046	25,944	1,033,106	75,823

(Table 7 continued on next page.)

(Table 7 continued)

Unit and county 1/	Species group										
	Bass-wood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	Other hardwood
E. UPPER PENINSULA											
Alger	1,251	3,278	5,187	2,074	--	156	20,963	12,813	688	--	2,328
Chippewa	480	1,094	3,044	655	--	27	5,469	6,063	147	--	721
Delta	1,254	3,164	11,033	1,249	--	169	21,345	12,897	754	20	2,241
Luce	451	914	4,006	407	--	78	8,426	4,762	351	--	634
Mackinac	689	1,746	9,508	1,087	--	70	10,640	7,692	308	--	1,146
Menominee	803	1,788	15,752	1,089	--	118	10,849	8,532	691	36	1,288
Schoolcraft	979	2,801	4,673	1,722	--	103	15,797	10,029	461	11	2,000
Total	5,908	14,786	53,203	8,283	--	720	93,488	62,788	3,399	68	10,358
W. UPPER PENINSULA											
Baraga	1,879	915	5,067	1,793	2	93	18,326	7,954	1,024	14	770
Dickinson	781	2,052	13,955	1,282	--	97	13,064	8,111	454	31	1,464
Gogebic	1,281	1,173	1,081	876	17	1,064	19,567	10,187	1,113	93	880
Houghton	1,291	2,211	4,677	2,466	2	152	24,970	12,621	1,006	35	1,766
Iron	1,839	2,794	16,011	1,756	2	377	38,507	19,813	1,889	91	1,999
Keweenaw	98	148	185	234	--	21	3,082	1,401	133	--	134
Marquette	2,963	7,194	25,969	4,315	--	421	53,179	31,215	2,009	104	5,146
Ontonagon	8,007	1,007	4,268	2,544	40	150	35,824	13,713	2,814	34	689
Total	18,139	17,494	71,213	15,266	63	2,375	206,518	105,014	10,441	402	12,849
N. LOWER PENINSULA											
Alcona	97	155	3,978	--	--	--	391	4,374	528	--	--
Alpena	29	70	2,144	7	--	--	185	1,957	--	--	11
Antrim	59	91	161	8	--	--	263	490	--	--	8
Arenac	7	67	565	43	--	--	468	1,872	502	257	54
Bay	--	--	--	--	--	--	275	--	--	--	--
Benzie	82	48	156	6	--	--	189	408	50	12	34
Charlevoix	223	122	779	--	--	--	1,224	2,443	4	--	--
Cheboygan	454	270	3,736	--	--	--	1,997	7,830	1,368	--	--
Clare	--	140	203	61	--	--	919	3,288	2,461	796	237
Crawford	130	66	1,004	--	--	--	708	2,281	2,660	38	--
Emmet	233	119	1,555	--	--	--	1,501	3,689	--	--	--
Gladwin	48	25	634	--	--	--	456	2,944	44	47	--
Grand Traverse	107	99	214	17	--	--	602	1,123	697	386	215
Iosco	16	29	960	--	--	--	69	1,949	8	1	0
Isabella	--	--	72	--	--	--	--	1,067	--	--	--
Kalkaska	64	47	527	19	--	--	1,173	2,118	275	186	24
Lake	215	243	204	45	--	--	1,031	2,814	4,817	2,993	306
Leelanau	227	167	325	--	--	--	73	89	70	76	--
Manistee	981	697	301	4	--	--	2,498	2,980	1,709	1,711	1,287
Mason	113	151	515	30	--	--	419	1,380	1,277	1,067	279
Mecosta	--	15	344	46	--	--	552	1,416	864	511	48
Midland	--	33	233	15	--	--	82	741	206	135	22
Missaukee	323	30	319	14	--	--	2,090	4,037	1,023	787	169
Montmorency	117	111	2,473	--	--	--	433	2,943	1,342	--	--
Newaygo	--	160	112	101	--	--	615	2,718	2,907	1,898	134
Oceana	--	38	45	24	--	--	112	754	1,650	1,526	68
Ogemaw	110	54	1,448	--	--	--	338	1,741	1,700	83	35
Osceola	174	209	701	104	--	--	1,575	3,406	1,122	416	170
Oscoda	23	53	892	--	--	--	353	1,962	1,736	--	--
Otsego	564	586	2,426	--	--	--	4,674	9,944	--	--	--
Presque Isle	173	273	6,600	--	--	--	437	4,531	330	--	--
Roscommon	4	8	509	2	--	--	210	2,783	649	548	2
Wexford	465	230	88	24	--	--	781	1,961	861	275	255
Total	5,039	4,405	34,222	570	--	--	26,692	84,033	30,860	13,749	3,358

(Table 7 continued on next page)

(Table 7 continued)

Unit and county 1/	Species group										
	Bass-wood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	Other hardwood
S. LOWER PENINSULA											
Allegan	--	--	--	--	--	--	--	3,084	3,931	4,249	--
Barry	--	--	2	--	--	--	--	63	--	--	--
Calhoun	--	--	--	--	--	--	--	22	310	335	--
Cass	--	--	--	--	--	--	--	29	689	745	--
Gratiot	--	--	--	--	--	--	--	--	--	--	--
Ionia	--	67	--	--	--	--	168	188	314	116	90
Kent	--	--	2	--	--	--	2	951	743	640	1
Lenawee	--	--	--	--	--	--	173	--	--	--	--
Montcalm	--	85	10	8	--	--	329	508	1,779	1,358	71
Muskegon	--	41	7	6	--	--	29	331	2,665	2,471	6
Ottawa	--	--	5	--	--	--	--	55	103	112	--
St. Joseph	--	--	--	--	--	--	--	845	1,033	745	--
Van Buren	--	--	--	--	--	--	--	845	1,033	745	--
Total	--	193	26	14	--	--	701	6,920	12,601	11,515	168
State total	29,086	36,878	158,664	24,134	63	3,095	327,400	258,755	57,301	25,733	26,733

Table 8. -- Pulpwood receipts by species group, Michigan, 1946-1992

(In thousand standard cords, unpeeled) 1/

Year	Total	Pine	Roundwood							Residue	
			Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	416	85	38	81	133	2	69	*	8	--	--
1947	444	141	60	64	118	1	50	1	9	--	--
1948	485	132	76	46	132	1	78	--	19	--	1
1949	258	53	45	7	88	--	40	*	25	--	--
1950	383	66	60	40	101	--	87	1	28	--	--
1951	582	134	81	100	108	--	126	*	33	--	--
1952	449	80	68	60	116	--	102	1	22	--	--
1953	451	75	54	45	102	--	142	--	33	--	--
1954	412	37	53	*	97	--	198	--	27	--	--
1955	455	20	53	2	102	--	240	--	38	--	--
1956	535	31	61	*	92	--	323	--	28	--	--
1957	533	48	83	2	90	--	264	1	45	--	--
1958	549	107	70	*	73	--	234	--	65	--	--
1959	699	116	70	1	94	--	336	--	81	--	1
1960	810	128	85	2	94	--	431	5	65	--	--
1961	700	109	68	*	75	--	351	6	91	--	--
1962	679	97	35	--	29	--	387	14	117	--	--
1963	742	84	49	--	78	--	399	9	123	--	--
1964	791	107	40	*	68	*	429	18	127	--	2
1965	825	114	35	4	71	--	436	29	118	--	18
1966	1,004	143	44	5	78	--	526	8	159	--	41
1967	774	117	46	2	81	--	323	6	161	--	38
1968	774	133	35	3	61	--	328	11	147	--	56
1969	771	116	19	2	16	--	358	22	152	--	86
1970	805	152	26	3	22	--	332	28	154	11	77
1971	700	115	19	2	17	*	298	22	165	1	61
1972	931	127	27	22	14	7	322	35	282	9	86
1973	1,199	135	37	36	14	4	404	64	351	12	142
1974	1,324	156	33	29	12	6	482	77	369	9	151
1975	844	167	18	23	7	4	288	33	171	8	125
1976	1,115	213	21	56	11	5	327	53	258	17	154
1977	1,233	208	51	62	25	10	370	48	269	17	173
1978	1,332	218	54	51	20	8	423	71	311	21	155
1979 2/	1,490	222	47	46	13	10	527	85	343	13	184
1980	1,493	202	51	52	28	12	525	73	393	11	146
1981	1,448	188	67	37	22	15	486	85	383	14	151
1982	1,387	216	69	52	44	19	493	73	305	11	105
1983	1,787	204	63	46	51	27	746	114	371	17	148
1984	2,000	234	46	46	37	22	833	103	494	14	171
1985	2,264	264	64	34	57	52	819	103	686	20	165
1986	2,630	268	80	40	71	55	811	272	822	54	157
1987	2,610	239	89	35	68	67	783	276	809	73	171
1988	2,925	231	108	33	61	35	947	323	936	63	188
1989	3,073	179	129	40	76	43	1,073	362	908	68	195
1990	2,913	230	79	43	13	12	1,068	304	879	76	209
1991	2,979	247	94	47	15	15	1,026	262	994	80	198
1992	2,801	288	69	35	14	12	957	244	920	81	181

* *Less than 500 cords.*

1/ *Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

2/ *Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard.*

Table 9. -- Pulpwood receipts by origin, Michigan, 1946-1992

(In thousand standard cords, unpeeled) 1/

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	Canada
1946	416	259	--	12	--	145
1947	444	239	42	21	--	142
1948	485	271	--	22	1	191
1949	258	130	--	3	*	125
1950	383	258	--	3	--	122
1951	582	398	4	9	1	170
1952	449	290	5	1	2	151
1953	451	319	11	11	*	110
1954	412	309	*	4	*	99
1955	455	356	--	5	--	94
1956	535	437	--	7	--	91
1957	533	427	--	9	--	97
1958	549	458	--	7	--	84
1959	699	603	3	7	--	86
1960	810	727	*	*	--	83
1961	700	628	1	--	--	71
1962	679	677	1	1	--	--
1963	742	669	2	--	--	71
1964	791	730	2	--	--	59
1965	825	750	1	--	--	74
1966	1,004	902	3	*	2	97
1967	774	685	*	*	4	85
1968	774	702	4	*	7	61
1969	771	751	9	--	9	2
1970	805	784	10	*	10	1
1971	700	689	*	*	11	*
1972	931	917	3	*	11	--
1973	1,199	1,131	55	*	13	--
1974	1,324	1,290	25	*	9	--
1975	844	815	19	--	10	--
1976	1,115	1,081	24	--	7	3
1977	1,233	1,159	65	--	9	--
1978	1,332	1,248	70	--	10	4
1979 2/	1,490	1,428	46	--	14	2
1980	1,493	1,443	35	--	12	3
1981	1,448	1,402	26	--	16	4
1982	1,387	1,340	28	--	16	3
1983	1,787	1,747	23	--	17	--
1984	2,000	1,934	45	--	18	3
1985	2,058	1,973	64	--	17	4
1986	2,631	2,429	177	*	16	9
1987	2,611	2,420	161	--	19	11
1988	2,855	2,597	233	2	22	1
1989	3,073	2,777	272	2	22	--
1990	2,913	2,645	243	1	21	3
1991	2,979	2,687	274	--	15	2
1992	2,801	2,532	253	--	16	--

* *Less than 500 cords.*

1/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

Table 10. -- Pulpwood receipts by species group and origin, Michigan, 1992

(In thousand standard cords, unpeeled) 1/

Type of material and species group	Total receipts	Origin of material				
		Michigan	Minnesota	Wisconsin	Other U.S.	Canada
ROUNDWOOD						
SOFTWOODS						
Cedar	6	6	--	*	--	--
Balsam fir	69	67	--	2	--	--
Hemlock	35	34	--	1	--	--
Jack pine	217	211	--	6	--	--
Red pine	57	55	--	1	--	--
White pine	14	14	--	*	--	--
Spruce	14	13	--	*	--	--
Tamarack	6	6	--	*	--	--
Total	419	407	--	12	--	--
HARDWOODS						
Ash	26	24	--	2	--	--
Aspen	957	909	--	48	--	--
Balsam poplar	81	76	--	5	--	--
Basswood	30	27	--	3	--	--
Beech	41	37	--	4	--	--
White birch	223	155	--	67	--	--
Yellow birch	21	20	--	2	--	--
Elm	3	2	--	1	--	--
Hard maple	353	301	--	51	--	--
Soft maple	274	248	--	27	--	--
Red oak	58	56	--	3	--	--
White oak	25	25	--	--	--	--
Other hardwoods	29	26	--	3	--	--
Total	2,121	1,905	--	215	--	--
All species	2,539	2,312	--	227	--	--
RESIDUES 2/						
Softwood	81	70	--	11	--	--
Hardwood	165	150	--	15	16	--
Total	246	220	--	26	16	--
ALL MATERIAL	2,801	2,532	--	253	16	--

1/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

* *Less than 500 cords*

Table 11. -- Saw-log production and receipts by species group, Michigan, 1990 and 1992

(In thousand board feet) 1/

Species group	Production			Receipts		
	1990	1992	Change	1990	1992	Change
SOFTWOODS						
Cedar	12,223	10,932	-1,291	12,015	11,015	-1,000
Balsam fir	1,675	1,195	-480	1,580	1,165	-415
Hemlock	2,655	2,888	233	2,484	2,427	-57
Jack pine	9,978	14,381	4,403	7,318	9,439	2,121
Red pine	80,660	91,282	10,622	75,401	89,731	14,330
White pine	24,379	18,045	-6,334	21,594	16,609	-4,985
Spruce	3,763	1,520	-2,243	3,712	1,404	-2,308
Tamarack	214	22	-192	2	6	4
Total	135,547	140,266	4,719	124,106	131,796	7,690
HARDWOODS						
Ash	14,804	18,498	3,694	12,972	16,922	3,950
Aspen	104,591	118,592	14,001	95,451	113,341	17,890
Balsam poplar	904	990	86	852	990	138
Basswood	24,282	26,172	1,890	18,715	22,802	4,087
Beech	17,545	11,291	-6,254	17,152	11,646	-5,506
Paper birch	9,215	9,199	-16	7,632	4,482	-3,150
Yellow birch	7,974	8,289	315	7,016	7,003	-13
Cottonwood	2,752	3,324	572	2,679	3,043	364
Elm	1,107	740	-367	880	419	-461
Hickory	2,234	1,115	-1,119	1,678	102	-1,576
Hard maple	110,337	102,495	-7,842	102,568	92,106	-10,462
Soft maple	60,038	54,220	-5,818	57,302	50,234	-7,068
Red oak	107,011	104,825	-2,186	106,094	100,683	-5,411
White oak	19,288	18,831	-457	18,033	16,840	-1,193
Walnut	1,216	2,297	1,081	796	1,484	688
Other hardwoods	5,992	11,235	5,243	4,071	7,549	3,478
Total	489,290	492,112	2,822	453,891	449,647	-4,244
All species	624,837	632,378	7,541	577,997	581,443	3,446

1/ International 1/4-inch rule.

Table 12. -- Saw-log production by Forest Survey Unit, species group, and destination, Michigan, 1992

(In thousand board feet) 1/

Species	All Units						
	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
SOFTWOODS							
Balsam fir	1,195	--	1,140	--	55	--	--
Tamarack	22	--	6	--	16	--	--
Spruce	1,520	--	1,404	16	100	--	--
Jack pine	14,381	--	9,439	--	1,421	--	3,521
Red pine	91,282	--	88,116	105	3,061	--	--
White pine	18,045	20	16,596	144	1,285	--	--
N. white cedar	10,932	--	10,932	--	--	--	--
Hemlock	2,888	--	2,427	--	461	--	--
Total	140,266	20	130,061	265	6,399	--	3,521
HARDWOODS							
Soft maple	54,220	2,116	49,472	--	2,608	15	8
Hard maple	102,495	2,621	90,081	--	9,757	29	7
White birch	9,199	77	4,360	--	3,019	--	1,742
Yellow birch	8,289	--	6,780	--	974	--	536
Hickory	1,115	1,012	102	--	--	--	--
Hackberry	2,008	--	2,008	--	--	--	--
Beech	11,291	664	10,471	--	140	7	8
Ash	18,498	1,953	16,309	--	192	43	--
Butternut	203	--	9	--	194	--	--
Black walnut	2,297	806	1,484	--	--	7	--
Yellow-poplar	1,862	1,403	445	--	--	14	--
Sycamore	852	798	47	--	--	7	--
Cottonwood	3,324	265	3,043	--	8	8	--
Balsam poplar	990	--	990	--	--	--	--
Aspen	118,592	--	112,494	108	5,990	--	--
Black cherry	6,141	1,113	4,989	--	31	7	--
Red oak group	104,825	6,793	96,144	--	945	100	843
White oak group	18,831	2,409	16,006	--	46	146	225
Sassafras	12	--	12	--	--	--	--
Basswood	26,172	888	22,648	--	2,632	--	4
Elm	740	308	418	--	14	--	--
Other hardwoods	157	145	--	--	--	--	12
Total	492,112	23,371	438,312	108	26,552	383	3,386
All species	632,378	23,391	568,373	373	32,951	383	6,908

* Less than 500 board feet.

1/ International 1/4-inch rule.

(Table 12 continued on next page.)

(Table 12 continued.)

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Eastern Upper Peninsula							
SOFTWOODS							
Balsam fir	797	--	797	--	--	--	--
Spruce	1,169	--	1,146	--	23	--	--
Jack pine	854	--	854	--	--	--	--
Red pine	8,448	--	8,448	--	--	--	--
White pine	4,679	--	4,637	--	42	--	--
N. white cedar	6,190	--	6,190	--	--	--	--
Hemlock	413	--	362	--	51	--	--
Total	22,550	--	22,433	--	116	--	--
HARDWOODS							
Soft maple	4,339	--	4,098	--	239	--	2
Hard maple	7,942	--	7,084	--	855	--	3
White birch	3,666	--	1,678	--	438	--	1,550
Yellow birch	1,255	--	607	--	116	--	533
Beech	4,166	--	4,159	--	--	--	7
Ash	610	--	574	--	36	--	--
Balsam poplar	166	--	166	--	--	--	--
Aspen	7,104	--	6,950	--	154	--	--
Black cherry	170	--	160	--	10	--	--
Red oak group	543	--	506	--	37	--	--
White oak group	3	--	--	--	3	--	--
Basswood	2,472	--	2,358	--	114	--	*
Elm	147	--	146	--	1	--	--
Total	32,583	--	28,487	--	2,002	--	2,094
All species	55,132	--	50,920	--	2,118	--	2,094
Western Upper Peninsula							
SOFTWOODS							
Balsam fir	100	--	45	--	55	--	--
Tamarack	21	--	5	--	16	--	--
Spruce	129	--	36	16	77	--	--
Jack pine	1,434	--	14	--	1,421	--	--
Red pine	6,025	--	2,859	105	3,061	--	--
White pine	7,205	--	5,819	144	1,243	--	--
N. white cedar	582	--	582	--	--	--	--
Hemlock	1,923	--	1,513	--	410	--	--
Total	17,419	--	10,872	265	6,283	--	-
HARDWOODS							
Soft maple	12,076	--	9,707	--	2,370	--	--
Hard maple	51,091	--	42,207	--	8,884	--	--
White birch	3,738	--	1,157	--	2,581	--	--
Yellow birch	6,729	--	5,870	--	858	--	--
Beech	327	--	187	--	140	--	--
Ash	1,512	--	1,360	--	152	--	--
Butternut	194	--	--	--	194	--	--
Balsam poplar	3	--	3	--	--	--	--
Aspen	13,583	--	7,644	108	5,832	--	--
Black cherry	435	--	414	--	21	--	--
Red oak group	4,928	--	4,075	--	853	--	--
White oak group	20	--	--	--	20	--	--
Basswood	7,723	--	5,226	--	2,497	--	--
Elm	50	--	40	--	10	--	--
Total	102,410	--	77,889	108	24,413	--	--
All species	119,830	--	88,761	373	30,696	--	--

(Table 12 continued on next page.)

(Table 12 continued.)

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Northern Lower Peninsula							
SOFTWOODS							
Balsam fir	298	--	298	--	--	--	--
Tamarack	1	--	1	--	--	--	--
Spruce	223	--	223	--	--	--	--
Jack pine	12,093	--	8,572	--	--	--	3,521
Red pine	67,824	--	67,824	--	--	--	--
White pine	5,616	--	5,616	--	--	--	--
N. white cedar	4,159	--	4,159	--	--	--	--
Hemlock	552	--	552	--	--	--	--
Total	90,766	--	87,245	--	--	--	3,521
HARDWOODS							
Soft maple	24,630	--	24,623	--	--	--	7
Hard maple	36,266	--	36,262	--	--	--	4
White birch	1,682	--	1,489	--	--	--	193
Yellow birch	303	--	299	--	--	--	3
Hackberry	75	--	75	--	--	--	--
Beech	5,259	--	5,258	--	--	--	1
Ash	8,649	--	8,649	--	--	--	--
Butternut	3	--	3	--	--	--	--
Black walnut	21	--	21	--	--	--	--
Sycamore	35	--	35	--	--	--	--
Cottonwood	403	--	403	--	--	--	--
Balsam poplar	813	--	813	--	--	--	--
Aspen	92,926	--	92,926	--	--	--	--
Black cherry	1,114	--	1,114	--	--	--	--
Red oak group	66,489	--	65,747	--	--	--	741
White oak group	6,748	--	6,571	--	--	--	177
Basswood	13,327	--	13,323	--	--	--	4
Elm	112	--	112	--	--	--	--
Other hardwoods	3	--	--	--	--	--	3
Total	258,858	--	257,725	--	--	--	1,133
All species	349,625	--	344,970	--	--	--	4,655
Southern Lower Peninsula							
SOFTWOODS							
Red pine	8,985	--	8,985	--	--	--	--
White pine	545	20	525	--	--	--	--
Total	9,530	20	9,510	--	--	--	--
HARDWOODS							
Soft maple	13,175	2,116	11,044	--	--	15	--
Hard maple	7,195	2,621	4,527	--	17	29	--
White birch	113	77	36	--	--	--	--
Yellow birch	3	--	3	--	--	--	--
Hickory	1,115	1,012	102	--	--	--	--
Hackberry	1,933	--	1,933	--	--	--	--
Beech	1,539	664	868	--	--	7	--
Ash	7,727	1,953	5,727	--	4	43	--
Butternut	6	--	6	--	--	--	--
Black walnut	2,276	806	1,463	--	--	7	--
Yellow-poplar	1,862	1,403	445	--	--	14	--
Sycamore	817	798	12	--	--	7	--
Cottonwood	2,921	265	2,640	--	8	8	--
Balsam poplar	8	--	8	--	--	--	--
Aspen	4,979	--	4,974	--	5	--	--
Black cherry	4,422	1,113	3,301	--	1	7	--
Red oak group	32,865	6,793	25,815	--	55	100	102
White oak group	12,061	2,409	9,435	--	23	146	48
Sassafras	12	--	12	--	--	--	--
Basswood	2,650	888	1,742	--	21	--	--
Elm	431	308	120	--	3	--	--
Other hardwoods	154	145	--	--	--	--	9
Total	98,261	23,371	74,212	--	137	383	159
All species	107,791	23,391	83,722	--	137	383	159

Table 13. -- Saw-log production by Forest Survey Unit, county, and species group, Michigan, 1992

(In thousand board feet) 1/

Unit and county	Balsam fir	Tama-rack	Spruce	Jack pine	Red pine	White pine	Northern white cedar	Hem-lock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry	Beech
Eastern Upper Peninsula																
Alger	--	--	71	24	560	549	283	22	1,509	932	2,358	664	411	--	--	1,296
Chippewa	175	--	381	479	299	309	858	5	2,506	628	688	342	98	--	--	643
Delta	140	--	112	--	1,729	777	1,145	309	4,210	557	619	424	181	--	--	195
Luce	10	--	91	185	277	312	197	10	1,083	592	661	195	120	--	--	769
Mackinac	123	--	323	98	2,043	469	1,878	3	4,936	607	2,001	632	159	--	--	626
Menominee	279	--	14	--	1,133	786	1,161	57	3,430	366	938	975	96	--	--	60
Schoolcraft	70	--	177	67	2,408	1,477	668	7	4,874	658	677	433	189	--	--	577
Total	797	--	1,169	854	8,448	4,679	6,190	413	22,550	4,339	7,942	3,666	1,255	--	--	4,166
Western Upper Peninsula																
Baraga	--	--	10	235	1,114	1,641	47	850	3,898	2,725	10,600	150	1,634	--	--	35
Dickinson	40	--	2	--	1,161	951	169	1	2,324	181	707	522	40	--	--	--
Gogebic	52	--	50	252	911	361	28	172	1,825	1,298	8,549	659	980	--	--	10
Houghton	4	--	8	96	870	1,251	43	506	2,777	2,323	9,326	495	1,229	--	--	--
Iron	5	5	25	100	265	407	5	40	853	1,235	4,556	1,313	583	--	--	44
Keweenaw	--	--	3	--	134	377	89	38	641	894	2,891	115	449	--	--	--
Marquette	--	--	10	558	724	1,906	196	179	3,574	1,486	3,484	329	456	--	--	238
Ontonagon	--	16	20	194	846	310	5	138	1,529	1,935	10,979	154	1,358	--	--	--
Total	100	21	129	1,434	6,025	7,205	582	1,923	17,419	12,076	51,091	3,738	6,729	--	--	327
Northern Lower Peninsula																
Alcona	2	--	7	524	1,842	883	467	2	3,727	668	595	292	18	--	--	75
Alpena	52	--	42	108	280	216	682	1	1,381	426	81	108	28	--	--	--
Antrim	--	--	2	--	374	7	--	32	415	406	3,399	11	22	--	--	545
Arenac	--	--	--	--	4	--	--	--	4	289	46	29	--	--	--	--
Bay	--	--	--	--	1	1	--	--	2	35	2	--	--	--	--	--
Benzie	--	--	--	--	3,335	1	1	29	3,366	536	2,781	--	--	--	--	378
Charlevoix	--	--	1	7	114	20	200	24	365	277	3,297	184	67	--	--	686
Cheboygan	137	--	87	365	2,596	242	794	--	4,221	921	1,459	208	29	--	--	338
Clare	--	--	--	15	205	7	--	--	227	729	55	2	--	--	--	4
Crawford	--	--	--	2,452	4,194	429	24	--	7,099	340	155	1	4	--	--	50
Emmet	--	--	--	--	1,978	6	--	--	1,984	891	2,646	33	19	--	--	828
Gladwin	--	--	--	2	218	126	--	--	346	661	1	23	--	--	--	--
Grand Traver	--	--	--	110	1,689	26	4	87	1,916	481	1,301	1	1	--	--	201
Iosco	2	--	--	282	3,600	433	8	2	4,327	449	100	42	--	--	--	1
Isabella	--	--	--	--	165	--	--	--	165	236	62	2	--	--	6	4
Kalkaska	--	--	3	737	4,907	168	2	28	5,844	723	1,175	29	10	--	--	129
Lake	--	--	--	--	3,553	119	--	--	3,672	1,273	1,460	--	--	--	--	88
Leelanau	--	--	--	--	27	17	23	29	96	279	2,343	6	--	--	3	184
Manistee	--	--	--	--	6,477	16	--	174	6,667	1,337	2,771	1	--	--	11	436
Mason	--	--	--	--	1,357	14	--	41	1,413	1,142	803	--	--	--	--	127
Mecosta	--	--	--	4	1,269	108	--	2	1,383	245	306	3	1	--	--	4
Midland	--	--	--	--	42	49	*	1	92	318	4	2	*	--	1	10
Missaukee	--	1	2	483	1,513	40	13	1	2,052	860	572	12	--	--	--	18
Montmorency	11	--	12	1,010	1,674	340	605	--	3,651	1,618	612	139	17	--	1	42
Newaygo	--	--	--	--	5,257	286	--	52	5,595	2,042	987	1	9	--	53	204
Oceana	--	--	--	--	127	35	--	31	193	1,224	519	--	2	--	--	116
Ogemaw	--	--	--	848	209	83	--	--	1,140	878	454	150	25	--	--	7
Osceola	--	--	--	--	1,190	99	32	12	1,333	1,666	3,140	2	--	--	--	131
Oscoda	--	--	--	3,351	3,822	955	--	--	8,127	301	585	126	9	--	--	67
Otsego	50	--	51	398	2,670	472	100	--	3,741	573	2,123	132	18	--	--	355
Presque Isle	45	--	15	279	437	101	1,199	--	2,076	346	589	83	24	--	--	112
Roscommon	--	--	--	1,105	3,027	297	4	--	4,433	1,835	96	60	--	--	--	--
Wexford	--	--	2	14	9,669	22	2	5	9,715	628	1,750	4	--	--	--	119
Total	298	1	223	12,093	67,824	5,616	4,159	552	90,766	24,630	36,266	1,682	303	--	75	5,259

* Less than 500 board feet.

1/ International 1/4-inch rule.

(Table 13 continued on next page.)

(Table 13 continued.)

Unit and county	Balsam fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Northern white cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Southern Lower Peninsula																
Allegan	--	--	--	--	5,174	57	--	--	5,232	503	56	--	--	7	39	114
Barry	--	--	--	--	592	71	--	--	663	694	1,584	--	--	113	129	105
Berrien	--	--	--	--	--	--	--	--	--	157	656	3	--	3	17	59
Branch	--	--	--	--	--	--	--	--	--	553	52	--	--	4	24	--
Calhoun	--	--	--	--	3	--	--	--	3	645	58	--	--	133	142	28
Cass	--	--	--	--	--	--	--	--	--	296	62	--	--	58	57	12
Clinton	--	--	--	--	--	--	--	--	--	247	37	--	--	--	115	--
Eaton	--	--	--	--	--	--	--	--	--	1,004	472	--	--	1	103	37
Genesee	--	--	--	--	--	--	--	--	--	109	133	--	--	--	11	12
Gratiot	--	--	--	--	1	0	--	--	2	465	78	--	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	19	322	--	--	--	15	--
Huron	--	--	--	--	--	--	--	--	--	203	42	26	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	125	263	--	--	--	64	23
Ionia	--	--	--	--	--	--	--	--	--	446	197	--	1	--	26	354
Jackson	--	--	--	--	1	1	--	--	2	104	--	--	--	200	152	--
Kalamazoo	--	--	--	--	8	6	--	--	14	144	11	--	--	6	35	3
Kent	--	--	--	--	492	11	--	--	502	745	824	1	1	--	31	12
Lapeer	--	--	--	--	--	2	--	--	2	448	212	6	--	--	34	12
Lenawee	--	--	--	--	--	7	--	--	7	53	853	--	--	103	73	92
Livingston	--	--	--	--	--	--	--	--	--	312	--	--	--	1	172	--
Macomb	--	--	--	--	--	--	--	--	--	292	80	--	--	--	49	22
Monroe	--	--	--	--	--	--	--	--	--	15	8	--	--	73	47	--
Montcalm	--	--	--	--	1,551	267	--	--	1,817	1,374	114	41	--	--	30	108
Muskegon	--	--	--	--	882	92	--	--	974	1,198	35	2	--	--	2	170
Oakland	--	--	--	--	--	8	--	--	8	461	12	--	--	--	69	11
Ottawa	--	--	--	--	269	2	--	--	271	530	136	--	1	--	4	179
Saginaw	--	--	--	--	--	3	--	--	3	333	38	7	--	48	18	--
Sanilac	--	--	--	--	--	--	--	--	--	59	80	11	--	--	--	1
Shiawassee	--	--	--	--	--	--	--	--	--	269	85	--	--	--	65	31
St. Clair	--	--	--	--	--	2	--	--	2	232	206	--	--	--	14	53
St. Joseph	--	--	--	--	--	1	--	--	1	218	35	--	--	190	137	--
Tuscola	--	--	--	--	13	--	--	--	13	435	95	15	--	--	2	2
Van Buren	--	--	--	--	*	15	--	--	15	309	321	--	--	63	60	58
Washtenaw	--	--	--	--	--	--	--	--	--	159	35	--	--	111	190	38
Wayne	--	--	--	--	--	--	--	--	--	17	4	--	--	--	8	5
Total	--	--	--	--	8,985	545	--	--	9,530	13,175	7,195	113	3	1,115	1,933	1,539
State total	1,195	22	1,520	14,381	91,282	18,045	10,932	2,888	140,266	54,220	102,495	9,199	8,289	1,115	2,008	11,291

(Table 13 continued on next page.)

(Table 13 continued .)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Eastern Upper Peninsula																	
Alger	56	--	--	--	--	--	5	169	81	2	--	--	144	2	--	6,120	7,630
Chippewa	30	--	--	--	--	--	48	1,317	11	23	--	--	71	--	--	3,898	6,404
Delta	148	--	--	--	--	--	1	1,687	13	79	--	--	612	1	--	4,516	8,727
Luce	13	--	--	--	--	--	7	141	15	1	--	--	75	--	--	2,590	3,673
Mackinac	48	--	--	--	--	--	53	1,132	13	10	--	--	1,145	--	--	6,425	11,361
Menominee	272	--	--	--	--	--	36	2,321	--	429	3	--	322	144	--	5,962	9,392
Schoolcraft	44	--	--	--	--	--	16	337	38	--	--	--	104	--	--	3,072	7,946
Total	610	--	--	--	--	--	166	7,104	170	543	3	--	2,472	147	--	32,583	55,132
Western Upper Peninsula																	
Baraga	169	--	--	--	--	--	--	1,446	132	370	--	--	1,236	5	--	18,502	22,400
Dickinson	46	--	--	--	--	--	--	1,552	1	284	--	--	542	6	--	3,882	6,206
Gogebic	404	--	--	--	--	--	--	2,075	73	335	5	--	1,628	10	--	16,027	17,852
Houghton	129	--	--	--	--	--	--	1,716	33	794	2	--	950	3	--	16,999	19,777
Iron	69	194	--	--	--	--	--	2,172	90	323	3	--	1,070	2	--	11,655	12,508
Keweenaw	18	--	--	--	--	--	--	108	1	866	--	--	92	1	--	5,435	6,076
Marquette	123	--	--	--	--	--	3	2,511	50	1,636	--	--	610	13	--	10,938	14,511
Ontonagon	554	--	--	--	--	--	--	2,003	55	319	9	--	1,596	10	--	18,972	20,501
Total	1,512	194	--	--	--	--	3	13,583	435	4,928	20	--	7,723	50	--	102,410	119,830
Northern Lower Peninsula																	
Alcona	495	3	--	--	--	--	395	12,248	7	5,873	196	--	600	--	--	21,464	25,191
Alpena	133	--	--	--	--	--	21	4,152	--	1,377	19	--	95	--	--	6,439	7,820
Antrim	340	--	--	--	--	--	--	573	14	57	--	--	1,770	5	--	7,142	7,557
Arenac	401	--	--	--	--	87	23	4,202	1	413	10	--	41	--	--	5,541	5,546
Bay	42	--	*	--	--	8	--	--	*	21	2	--	8	4	--	123	124
Benzie	415	--	--	--	--	--	--	98	70	635	360	--	426	--	--	5,698	9,064
Charlevoix	753	--	--	--	--	--	--	442	4	264	221	--	2,074	33	--	8,303	8,666
Cheboygan	97	--	--	--	--	--	--	3,028	--	521	1	--	673	--	--	7,274	11,496
Clare	75	--	--	--	--	5	--	2,131	30	2,739	131	--	6	--	--	5,906	6,133
Crawford	--	--	--	--	--	--	--	3,153	5	1,856	63	--	167	--	--	5,793	12,892
Emmet	452	--	--	--	--	--	--	2,450	28	187	--	--	737	11	--	8,282	10,266
Gladwin	53	--	--	--	--	14	2	2,914	2	2,007	100	--	17	33	--	5,826	6,172
Grand Traver:	105	--	--	--	--	--	--	734	15	1,220	156	--	229	--	--	4,444	6,360
Iosco	305	--	--	--	--	160	96	2,629	7	787	67	--	84	--	--	4,727	9,054
Isabella	94	--	--	--	--	6	--	469	20	782	86	--	27	1	--	1,794	1,959
Kalkaska	108	--	--	--	--	--	--	1,955	46	1,029	14	--	430	--	--	5,648	11,492
Lake	589	--	--	--	--	--	1	2,961	54	7,434	1,160	--	584	--	--	15,603	19,276
Leelanau	297	--	--	--	--	--	--	68	1	443	141	--	483	--	--	4,246	4,340
Manistee	314	--	--	--	--	--	--	663	142	3,156	334	--	219	--	--	9,384	16,052
Mason	389	--	--	--	--	--	1	923	58	3,232	543	--	182	--	--	7,399	8,812
Mecosta	109	--	--	--	--	--	--	901	48	471	69	--	142	--	--	2,299	3,688
Midland	144	--	*	--	--	122	--	1,307	2	887	271	--	34	10	--	3,112	3,204
Missaukee	117	--	--	--	--	--	--	1,474	31	1,419	42	--	71	--	--	4,616	6,668
Montmorency	189	--	--	--	--	--	5	9,576	1	2,747	24	--	360	--	--	15,330	18,981
Newaygo	362	--	14	--	35	--	--	1,150	196	7,726	1,203	--	168	7	1	14,159	19,754
Oceana	133	--	--	--	--	--	1	624	83	2,483	225	--	85	--	1	5,497	5,691
Ogemaw	407	--	--	--	--	2	106	6,103	8	2,746	47	--	245	--	--	11,177	12,316
Osceola	927	--	--	--	--	--	2	4,640	105	3,658	774	--	1,046	2	--	16,092	17,425
Oscoda	153	--	--	--	--	--	85	5,454	8	3,219	124	--	394	--	--	10,527	18,654
Otsego	195	--	--	--	--	--	--	4,032	7	327	2	--	1,585	5	--	9,354	13,095
Presque Isle	50	--	--	--	--	--	22	4,679	--	427	1	--	108	--	--	6,439	8,515
Roscommon	244	--	--	--	--	--	55	5,958	6	4,293	286	--	62	--	--	12,897	17,325
Wexford	165	--	7	--	--	--	--	1,234	113	2,049	75	--	179	--	1	6,322	16,037
Total	8,649	3	21	--	35	403	813	92,926	1,114	66,489	6,748	--	13,327	112	3	258,858	349,625

(Table 13 continued on next page.)

(Table 13 continued .)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Southern Lower Peninsula																	
Allegan	479	--	--	1,129	--	1	--	212	274	2,042	679	1	9	3	18	5,566	10,797
Barry	195	--	1	--	--	4	--	736	600	3,601	348	--	225	3	25	8,363	9,026
Berrien	93	--	--	518	805	29	4	56	364	413	57	1	26	70	20	3,351	3,351
Branch	318	--	43	--	--	18	--	12	63	60	278	--	16	14	--	1,455	1,455
Calhoun	764	--	--	15	--	8	--	72	430	356	353	--	415	15	15	3,451	3,454
Cass	139	1	237	46	--	4	--	11	344	405	116	1	29	95	21	1,934	1,934
Clinton	147	--	97	--	--	10	--	2	14	238	54	--	34	--	--	995	995
Eaton	439	--	130	--	--	1,085	3	10	68	242	81	--	157	27	--	3,857	3,857
Genesee	79	--	15	--	--	19	--	6	31	294	155	--	44	3	--	911	911
Gratiot	220	--	--	--	--	156	--	37	1	990	408	--	56	--	--	2,410	2,412
Hillsdale	50	--	74	--	--	--	--	--	6	18	47	--	6	3	--	560	560
Huron	192	--	--	--	--	457	--	907	58	31	10	--	31	--	--	1,956	1,956
Ingham	166	--	1	--	--	65	--	4	51	154	130	--	102	14	--	1,162	1,162
Ionia	225	--	57	1	--	--	--	18	140	889	110	--	433	3	--	2,900	2,900
Jackson	242	--	154	--	--	4	--	30	342	2,095	684	--	72	1	16	4,096	4,098
Kalamazoo	46	--	--	79	3	3	--	46	146	414	38	--	--	1	7	981	995
Kent	214	--	14	--	--	--	--	76	182	2,429	556	--	159	3	7	5,253	5,755
Lapeer	107	--	1	--	--	192	--	37	28	422	437	--	52	--	--	1,988	1,989
Lenawee	115	--	87	--	--	--	--	42	19	139	128	--	196	--	--	1,900	1,907
Livingston	142	--	--	--	--	1	--	4	148	1,521	712	--	18	--	--	3,032	3,032
Macomb	54	--	--	--	3	36	--	51	6	125	330	--	44	--	--	1,092	1,092
Monroe	13	--	53	--	--	10	--	--	21	269	163	--	--	--	--	674	674
Montcalm	806	--	--	--	--	--	1	800	88	3,600	1,700	1	49	113	--	8,825	10,643
Muskegon	68	--	--	--	--	--	--	281	24	4,535	762	--	1	--	--	7,079	8,052
Oakland	116	--	19	--	2	6	--	13	74	562	194	--	6	1	--	1,545	1,553
Ottawa	84	--	--	8	--	--	--	18	28	1,460	205	--	17	1	--	2,671	2,942
Saginaw	300	--	--	--	--	41	--	9	4	188	508	--	2	--	--	1,495	1,498
Sanilac	113	--	--	--	--	65	--	459	21	18	22	--	64	--	--	912	912
Shiawassee	596	--	1	--	--	60	--	3	94	685	255	--	82	--	--	2,226	2,226
St. Clair	124	--	--	--	--	465	--	7	53	752	655	--	36	--	--	2,597	2,599
St. Joseph	295	4	755	45	4	3	--	116	143	1,559	120	6	26	16	7	3,679	3,680
Tuscola	211	--	4	--	--	156	--	877	118	93	55	--	122	--	--	2,185	2,198
Van Buren	368	--	17	21	--	3	--	24	314	1,321	157	1	12	30	18	3,098	3,113
Washtenaw	174	--	514	--	--	18	--	4	124	724	1,452	--	47	--	--	3,591	3,591
Wayne	34	--	3	--	--	3	--	1	--	220	101	--	62	14	--	471	471
Total	7,727	6	2,276	1,862	817	2,921	8	4,979	4,422	32,865	12,061	12	2,650	431	154	98,261	107,791
State total	18,498	203	2,297	1,862	852	3,324	990	118,592	6,141	104,825	18,831	12	26,172	740	157	492,112	632,378

Table 14. -- Saw-log receipts by Forest Survey Unit, species group, and origin, Michigan, 1992

(In thousand board feet) 1/

All Units

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Other U.S.	Canada
SOFTWOODS								
Balsam fir	1,165	--	1,140	--	25	--	--	--
Tamarack	6	--	6	--	--	--	--	--
Spruce	1,404	--	1,404	--	--	--	--	--
Jack pine	9,439	--	9,439	--	--	--	--	--
Red pine	89,731	--	88,116	--	1,615	--	--	--
White pine	16,609	--	16,596	--	13	--	--	--
N. white cedar	11,015	--	10,932	--	83	--	--	--
Hemlock	2,427	--	2,427	--	--	--	--	--
Total	131,796	--	130,061	--	1,735	--	--	--
HARDWOODS								
Soft maple	50,234	26	49,472	52	506	14	--	164
Hard maple	92,106	7	90,081	186	1,225	4	--	604
White birch	4,482	--	4,360	5	103	--	--	14
Yellow birch	7,003	--	6,780	16	152	--	--	55
Hickory	102	--	102	--	--	--	--	--
Hackberry	2,008	--	2,008	--	--	--	--	--
Beech	11,646	2	10,471	--	719	--	--	454
Ash	16,922	269	16,309	--	81	262	--	--
Butternut	9	--	9	--	--	--	--	--
Black walnut	1,484	--	1,484	--	--	--	--	--
Yellow-poplar	452	4	445	--	--	3	--	--
Sycamore	47	--	47	--	--	--	--	--
Cottonwood	3,043	--	3,043	--	--	--	--	--
Balsam poplar	990	--	990	--	--	--	--	--
Aspen	113,341	--	112,494	--	848	--	--	--
Black cherry	5,021	14	4,989	--	4	14	--	--
Red oak group	100,683	883	96,144	1	2,727	841	83	5
White oak group	16,840	417	16,006	--	--	417	--	--
Sassafras	12	--	12	--	--	--	--	--
Basswood	22,802	3	22,648	--	151	--	--	--
Elm	419	--	418	--	1	--	--	--
Total	449,647	1,625	438,312	260	6,516	1,555	83	1,296
All species	581,443	1,625	568,373	260	8,251	1,555	83	1,296

1/ International 1/4-inch rule.

(Table 14 continued on next page.)

(Table 14 continued.)

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Other U.S.	Canada
Eastern Upper Peninsula								
SOFTWOODS								
Balsam fir	391	--	366	--	25	--	--	--
Spruce	680	--	680	--	--	--	--	--
Jack pine	335	--	335	--	--	--	--	--
Red pine	11,071	--	9,477	--	1,594	--	--	--
White pine	7,847	--	7,834	--	13	--	--	--
N. white cedar	3,780	--	3,697	--	83	--	--	--
Hemlock	1,293	--	1,293	--	--	--	--	--
Total	25,396	--	23,681	--	1,715	--	--	--
HARDWOODS								
Soft maple	6,052	--	5,373	52	463	--	--	164
Hard maple	13,597	--	11,777	186	1,030	--	--	604
White birch	2,085	--	1,963	5	103	--	--	14
Yellow birch	1,376	--	1,182	16	123	--	--	55
Beech	6,196	--	5,023	--	719	--	--	454
Ash	749	--	668	--	81	--	--	--
Balsam poplar	169	--	169	--	--	--	--	--
Aspen	9,060	--	8,213	--	848	--	--	--
Black cherry	187	--	187	--	--	--	--	--
Red oak group	5,164	--	2,730	1	2,427	--	--	5
Basswood	1,272	--	1,151	--	122	--	--	--
Elm	159	--	158	--	1	--	--	--
Total	46,064	--	38,592	260	5,916	--	--	1,296
All species	71,460	--	62,274	260	7,630	--	--	1,296
Western Upper Peninsula								
SOFTWOODS								
Balsam fir	15	--	15	--	--	--	--	--
Tamarack	5	--	5	--	--	--	--	--
Spruce	34	--	34	--	--	--	--	--
Jack pine	14	--	14	--	--	--	--	--
Red pine	101	--	80	--	21	--	--	--
White pine	2,552	--	2,552	--	--	--	--	--
N. white cedar	349	--	349	--	--	--	--	--
Hemlock	582	--	582	--	--	--	--	--
Total	3,653	--	3,632	--	21	--	--	--
HARDWOODS								
Soft maple	8,507	--	8,464	--	43	--	--	--
Hard maple	38,280	--	38,085	--	195	--	--	--
White birch	820	--	820	--	--	--	--	--
Yellow birch	5,337	--	5,308	--	29	--	--	--
Beech	98	--	98	--	--	--	--	--
Ash	1,265	--	1,265	--	--	--	--	--
Aspen	4,938	--	4,938	--	--	--	--	--
Black cherry	388	--	384	--	4	--	--	--
Red oak group	2,170	--	1,870	--	300	--	--	--
Basswood	5,512	--	5,483	--	29	--	--	--
Elm	28	--	28	--	--	--	--	--
Total	67,344	--	66,744	--	600	--	--	--
All species	70,996	--	70,376	--	621	--	--	--

(Table 14 continued on next page.)

(Table 14 continued.)

Species	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Other U.S.	Canada
Northern Lower Peninsula								
SOFTWOODS								
Balsam fir	759	--	759	--	--	--	--	--
Tamarack	1	--	1	--	--	--	--	--
Spruce	689	--	689	--	--	--	--	--
Jack pine	9,091	--	9,091	--	--	--	--	--
Red pine	76,711	--	76,711	--	--	--	--	--
White pine	5,746	--	5,746	--	--	--	--	--
N. white cedar	6,885	--	6,885	--	--	--	--	--
Hemlock	552	--	552	--	--	--	--	--
Total	100,434	--	100,434	--	--	--	--	--
HARDWOODS								
Soft maple	23,208	--	23,208	--	--	--	--	--
Hard maple	33,939	--	33,939	--	--	--	--	--
White birch	1,534	--	1,534	--	--	--	--	--
Yellow birch	281	--	281	--	--	--	--	--
Hackberry	71	--	71	--	--	--	--	--
Beech	4,382	--	4,382	--	--	--	--	--
Ash	8,335	--	8,335	--	--	--	--	--
Butternut	3	--	3	--	--	--	--	--
Black walnut	46	--	46	--	--	--	--	--
Sycamore	35	--	35	--	--	--	--	--
Cottonwood	495	--	495	--	--	--	--	--
Balsam poplar	814	--	814	--	--	--	--	--
Aspen	94,565	--	94,565	--	--	--	--	--
Black cherry	875	--	875	--	--	--	--	--
Red oak group	61,109	--	61,109	--	--	--	--	--
White oak group	5,693	--	5,693	--	--	--	--	--
Basswood	13,803	--	13,803	--	--	--	--	--
Elm	107	--	107	--	--	--	--	--
Total	249,295	--	249,295	--	--	--	--	--
All species	349,729	--	349,729	--	--	--	--	--
Southern Lower Peninsula								
SOFTWOODS								
Spruce	2	--	2	--	--	--	--	--
Red pine	1,848	--	1,848	--	--	--	--	--
White pine	463	--	463	--	--	--	--	--
N. white cedar	1	--	1	--	--	--	--	--
Total	2,313	--	2,313	--	--	--	--	--
HARDWOODS								
Soft maple	12,467	26	12,427	--	--	14	--	--
Hard maple	6,291	7	6,280	--	--	4	--	--
White birch	43	--	43	--	--	--	--	--
Yellow birch	8	--	8	--	--	--	--	--
Hickory	102	--	102	--	--	--	--	--
Hackberry	1,937	--	1,937	--	--	--	--	--
Beech	971	2	969	--	--	--	--	--
Ash	6,572	269	6,041	--	--	262	--	--
Butternut	6	--	6	--	--	--	--	--
Black walnut	1,438	--	1,438	--	--	--	--	--
Yellow-poplar	452	4	445	--	--	3	--	--
Sycamore	12	--	12	--	--	--	--	--
Cottonwood	2,548	--	2,548	--	--	--	--	--
Balsam poplar	7	--	7	--	--	--	--	--
Aspen	4,778	--	4,778	--	--	--	--	--
Black cherry	3,572	14	3,544	--	--	14	--	--
Red oak group	32,240	883	30,434	--	--	841	83	--
White oak group	11,147	417	10,313	--	--	417	--	--
Sassafras	12	--	12	--	--	--	--	--
Basswood	2,215	3	2,212	--	--	--	--	--
Elm	125	--	125	--	--	--	--	--
Total	86,945	1,625	83,682	--	--	1,555	83	--
All species	89,258	1,625	85,995	--	--	1,555	83	--

Table 15. -- Veneer-log production and receipts for selected years, Michigan, 1946-1992

(In thousand board feet) 1/

Year	Production	Receipts
1946	78,858	46,055
1948	77,684	53,899
1950	53,568	37,404
1952	40,219	28,547
1954	34,499	21,872
1956	39,655	23,564
1958	19,958	12,597
1960	18,487	12,075
1963	15,300	7,598
1965	20,392	12,428
1966	21,942	12,782
1968	19,333	9,573
1969	19,194	14,970
1970	15,039	6,729
1972	18,479	5,324
1974 2/	25,949	25,322
1975	26,079	26,851
1976	33,373	28,764
1977	42,738	30,838
1978	35,030	39,179
1980	36,761	27,287
1984	31,753	13,737
1988	36,201	39,220
1990	37,836	41,736
1992	38,195	40,251

1/ International 1/4-inch rule.

2/ Includes veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 16. -- Veneer-log production and receipts by species group, Michigan, 1990 and 1992

(In thousand board feet) 1/

Species group	Production			Receipts		
	1990	1992	Change	1990	1992	Change
Jack pine	--	36	36	--	121	121
Red pine	445	200	-245	1,335	668	-667
White pine	1,755	672	-1,083	2,783	1,110	-1,673
Spruce	2,077	139	-1,938	6,232	462	-5,770
Hemlock	--	146	146	--	487	487
Tamarack	213	12	-201	635	40	-595
Ash	831	1,322	491	711	1,151	440
Aspen	4,885	6,167	1,282	13,706	19,490	5,784
Basswood	1,334	1,120	-214	78	--	-78
Beech	283	2,842	2,559	12	3,564	3,552
White birch	1,262	1,496	234	1,159	974	-185
Yellow birch	1,869	1,177	-692	1,288	379	-909
Cottonwood	60	50	-10	238	122	-116
Elm	44	49	5	16	57	41
Hickory	59	6	-53	58	--	-58
Hard maple	16,959	14,476	-2,483	9,292	5,555	-3,737
Soft maple	1,041	1,793	752	237	1,312	1,075
Red oak	3,580	4,406	826	1,922	1,859	-63
White oak	690	1,129	439	1,569	2,337	768
Walnut	111	324	213	122	228	106
Other species	338	633	295	343	334	-9
All species	37,836	38,195	359	41,736	40,251	-1,485

1/ International 1/4-inch rule.

Table17. -- Veneer-log production by Forest Survey Unit, species group, and destination, Michigan, 1992

(In thousand board feet) 1/

Species	All Units						
	Total	Indiana	Iowa	Michigan	Wisconsin	Ohio	Canada
SOFTWOODS							
Tamarack	12	--	--	12	--	--	--
Spruce	139	--	--	139	--	--	--
Jack pine	36	--	--	36	--	--	--
Red pine	200	--	--	200	--	--	--
White pine	672	--	--	333	165	--	174
Hemlock	146	--	--	146	--	--	--
Total	1,206	--	--	867	165	--	174
HARDWOODS							
Soft maple	1,793	--	--	994	799	--	--
Hard maple	14,476	1,911	23	4,012	6,340	1,509	682
White birch	1,496	46	--	948	502	--	--
Yellow birch	1,177	--	--	274	904	--	--
Hickory	6	2	--	--	--	--	3
Beech	2,842	--	--	2,769	--	--	73
Ash	1,322	30	--	1,020	126	53	93
Black walnut	324	231	--	31	--	42	19
Yellow-poplar	27	26	--	1	--	--	--
Sycamore	2	--	--	2	--	--	--
Cottonwood	50	--	--	50	--	--	--
Balsam poplar	17	--	--	--	17	--	--
Aspen	6,167	--	--	5,967	201	--	--
Black cherry	574	243	--	286	23	11	11
Red oak group	4,406	495	--	1,415	1,858	581	57
White oak group	1,129	149	23	523	6	102	325
Basswood	1,120	--	--	--	1,108	--	12
Elm	49	--	23	9	--	--	17
Other hardwoods	13	13	--	--	--	--	--
Total	36,989	3,145	68	18,300	11,883	2,298	1,293
All species	38,195	3,145	68	19,167	12,049	2,298	1,467

1/ International 1/4-inch rule.

(Table 17 continued on next page.)

(Table 17 continued.)

Species	Total	Indiana	Iowa	Michigan	Wisconsin	Ohio	Canada
Eastern Upper Peninsula							
SOFTWOODS							
White pine	163	--	--	--	59	--	103
Total	163	--	--	--	59	--	103
HARDWOODS							
Soft maple	548	--	--	324	224	--	--
Hard maple	2,712	--	5	922	1,243	--	542
White birch	606	--	--	557	49	--	--
Yellow birch	155	--	--	63	92	--	--
Beech	1,917	--	--	1,917	--	--	--
Ash	136	--	--	122	14	--	--
Balsam poplar	5	--	--	--	5	--	--
Aspen	56	--	--	--	56	--	--
Black cherry	11	--	--	--	11	--	--
Red oak group	102	--	--	2	100	--	--
Basswood	8	--	--	--	8	--	--
Total	6,257	--	5	3,909	1,801	--	542
All species	6,419	--	5	3,909	1,861	--	645
Western Upper Peninsula							
SOFTWOODS							
Tamarack	12	--	--	12	--	--	--
Spruce	139	--	--	139	--	--	--
Jack pine	36	--	--	36	--	--	--
Red pine	200	--	--	200	--	--	--
White pine	406	--	--	333	73	--	--
Hemlock	146	--	--	146	--	--	--
Total	939	--	--	867	73	--	--
HARDWOODS							
Soft maple	960	--	--	426	534	--	--
Hard maple	7,018	--	18	2,194	4,806	--	--
White birch	805	--	--	384	420	--	--
Yellow birch	964	--	--	202	762	--	--
Beech	9	--	--	9	--	--	--
Ash	393	--	--	319	74	--	--
Balsam poplar	11	--	--	--	11	--	--
Aspen	5,934	--	--	5,796	138	--	--
Black cherry	26	--	--	15	11	--	--
Red oak group	1,147	--	--	118	1,030	--	--
White oak group	15	--	--	15	--	--	--
Basswood	1,089	--	--	--	1,089	--	--
Total	18,371	--	18	9,477	8,876	--	--
All species	19,310	--	18	10,344	8,948	--	--

(Table 17 continued on next page.)

(Table 17 continued.)

Species	Total	Indiana	Iowa	Michigan	Wisconsin	Ohio	Canada
Northern Lower Peninsula							
SOFTWOODS							
White pine	104	--	--	--	33	--	71
Total	104	--	--	--	33	--	71
HARDWOODS							
Soft maple	265	--	--	224	42	--	--
Hard maple	1,248	--	--	860	291	--	97
White birch	40	--	--	6	33	--	--
Yellow birch	58	--	--	8	50	--	--
Beech	816	--	--	816	--	--	--
Ash	464	--	--	368	38	--	57
Aspen	168	--	--	162	6	--	--
Black cherry	145	--	--	138	--	--	7
Red oak group	1,735	--	--	971	729	--	35
White oak group	250	--	4	189	6	--	51
Basswood	19	--	--	--	10	--	9
Elm	13	--	3	8	--	--	2
Total	5,221	--	6	3,751	1,206	--	258
All species	5,325	--	6	3,751	1,240	--	329
Southern Lower Peninsula							
HARDWOODS							
Soft maple	19	--	--	19	--	--	--
Hard maple	3,498	1,911	--	35	--	1,509	43
White birch	46	46	--	--	--	--	--
Hickory	6	2	--	--	--	--	3
Beech	100	--	--	27	--	--	73
Ash	330	30	--	211	--	53	36
Black walnut	324	231	--	31	--	42	19
Yellow-poplar	27	26	--	1	--	--	--
Sycamore	2	--	--	2	--	--	--
Cottonwood	50	--	--	50	--	--	--
Aspen	9	--	--	9	--	--	--
Black cherry	392	243	--	133	--	11	5
Red oak group	1,421	495	--	324	--	581	22
White oak group	863	149	19	319	--	102	274
Basswood	3	--	--	--	--	--	3
Elm	36	--	20	1	--	--	15
Other hardwoods	13	13	--	--	--	--	--
Total	7,140	3,145	39	1,164	--	2,298	494
All species	7,140	3,145	39	1,164	--	2,298	494

Table 18.--Veneer-log receipts by origin for selected years, Michigan, 1946-1992

(In thousand board feet) 1/

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	2/ Canada
1946	46,055	44,534	--	--	956	565
1948	53,899	50,151	127	--	699	2,922
1950	37,404	33,125	454	73	477	3,275
1952	28,547	24,077	1,046	341	650	2,433
1954	21,872	18,596	582	183	137	2,374
1956	23,564	20,341	105	177	80	2,861
1958	12,597	10,785	80	166	40	1,526
1960	12,075	8,628	450	500	245	2,252
1963	7,598	5,315	495	235	165	1,388
1965	12,428	10,344	805	102	180	997
1966	12,782	10,654	585	138	206	1,199
1968	9,573	8,375	332	173	283	410
1969	14,970	12,663	1,498	300	59	450
1970	6,729	5,399	79	77	246	928
1972	5,324	4,565	66	33	--	660
1974 3/	25,322	12,724	11,136	1,092	--	370
1975	26,851	15,609	10,885	357	--	--
1976	28,764	18,516	9,830	418	--	--
1977	30,838	30,378	--	--	460	--
1978	39,179	22,597	15,000	1,000	525	57
1980	27,287	22,087	5,200	--	--	--
1984	13,737	11,052	146	520	2,019	--
1988	39,220	18,623	16,502	--	4,095	--
1990	41,736	21,724	17,110	--	2,902	--
1992	40,251	19,167	16,870	177	3,153	884

1/ International 1/4-inch rule.

2/ Includes only logs and bolts shipped to Canadian mills for processing.

3/ Includes all veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 19. -- Veneer-log receipts by species group and origin, Michigan, 1992

(In thousand board feet) 1/

Species	All Units									
	Total	Illinois	Indiana	Michigan	Minnesota	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
SOFTWOODS										
Tamarack	40	--	--	12	--	28	--	--	--	--
Spruce	462	--	--	139	--	323	--	--	--	--
Jack pine	121	--	--	36	--	84	--	--	--	--
Red pine	668	--	--	200	--	467	--	--	--	--
White pine	1,110	--	--	333	--	777	--	--	--	--
Hemlock	487	--	--	146	--	341	--	--	--	--
Total	2,889	--	--	867	--	2,022	--	--	--	--
HARDWOODS										
Soft maple	1,312	--	2	994	35	168	--	--	--	112
Hard maple	5,555	46	14	4,012	126	618	91	46	192	412
White birch	974	--	--	948	3	14	--	--	--	9
Yellow birch	379	--	--	274	11	56	--	--	--	37
Beech	3,564	--	23	2,769	--	464	--	--	--	309
Ash	1,151	11	38	1,020	--	--	23	11	48	--
Black walnut	228	23	10	31	--	--	46	23	96	--
Yellow-poplar	1	--	--	1	--	--	--	--	--	--
Sycamore	14	--	11	2	--	--	--	--	--	--
Cottonwood	122	--	72	50	--	--	--	--	--	--
Aspen	19,490	--	--	5,967	--	13,523	--	--	--	--
Black cherry	319	--	33	286	--	--	--	--	--	--
Red oak group	1,859	46	60	1,415	1	5	91	46	192	4
White oak group	2,337	211	84	523	--	--	422	211	886	--
Elm	57	6	1	9	--	--	11	6	24	--
Total	37,363	342	349	18,300	177	14,848	684	342	1,436	884
All species	40,251	342	349	19,167	177	16,870	684	342	1,436	884

1/ International 1/4-inch rule.

Table 20. -- Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1992

(In thousand cubic feet)

Unit and county	Balsam Fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Eastern Upper Peninsula																	
Alger	537	46	165	731	386	188	--	174	222	2,448	1,114	1,668	499	194	--	--	515
Chippewa	408	29	343	1,289	264	114	176	208	145	2,976	550	476	278	55	--	--	228
Delta	612	52	355	1,309	643	231	--	1,114	302	4,618	1,034	1,277	905	103	--	--	219
Luce	318	22	233	706	235	102	--	142	110	1,868	470	616	323	47	--	--	271
Mackinac	404	20	431	470	508	129	--	512	106	2,582	664	985	797	89	--	--	246
Menominee	469	43	347	530	401	195	--	827	142	2,955	683	797	1,351	75	--	--	109
Schoolcraft	858	76	382	1,815	954	398	--	644	312	5,439	861	1,007	431	129	--	--	284
Total	3,606	288	2,256	6,851	3,391	1,357	176	3,621	1,339	22,887	5,376	6,826	4,584	692	--	--	1,873
Western Upper Peninsula																	
Baraga	109	10	81	483	267	301	--	23	197	1,472	1,127	3,089	387	433	--	--	54
Dickinson	618	67	555	1,141	654	261	--	457	240	3,995	613	869	1,131	78	--	--	106
Gogebic	93	3	111	141	226	74	--	6	88	741	995	2,734	218	252	--	--	64
Houghton	228	16	291	554	309	245	--	19	150	1,812	1,380	3,202	430	373	--	--	117
Iron	345	20	826	308	149	102	--	316	74	2,141	1,661	3,005	1,424	219	--	--	155
Keweenaw	1	--	21	4	181	83	--	19	6	315	287	745	39	102	--	--	8
Marquette	1,403	148	1,358	4,134	846	570	--	527	797	9,782	2,570	3,691	1,961	346	--	--	423
Ontonagon	79	8	238	286	217	75	--	1	64	968	1,350	4,118	321	420	--	--	53
Total	2,876	274	3,480	7,049	2,849	1,713	--	1,368	1,617	21,225	9,982	21,452	5,910	2,222	--	--	981
Northern Lower Peninsula																	
Alcona	4	*	2	416	431	153	--	110	*	1,117	494	142	339	3	--	--	22
Alpena	11	*	8	73	83	38	--	178	*	391	265	29	173	5	--	--	4
Antrim	*	*	*	23	85	3	16	1	16	143	133	698	14	5	--	--	125
Arenac	--	--	--	35	13	1	*	4	--	53	235	33	46	2	--	--	3
Bay	--	--	--	--	*	*	--	*	--	1	18	15	--	--	--	--	--
Benzie	--	3	--	--	642	6	--	1	12	663	153	549	11	*	--	--	77
Charlevoix	--	--	*	4	25	4	--	40	4	77	217	685	87	13	--	--	152
Cheboygan	108	--	61	480	513	57	--	216	*	1,436	693	409	285	5	--	--	91
Clare	--	--	--	276	172	2	--	--	--	450	486	62	14	3	--	--	9
Crawford	--	*	--	1,597	858	83	--	6	--	2,544	240	92	65	1	--	--	19
Emmet	20	--	5	7	348	1	--	9	*	389	425	633	106	5	--	--	212
Gladwin	--	--	--	48	48	21	--	2	--	119	410	37	48	9	--	--	2
Grand Traverse	--	*	--	225	514	9	--	3	15	766	192	281	16	1	--	--	43
Iosco	*	*	--	222	897	74	*	2	*	1,196	293	24	76	--	--	--	2
Isabella	--	--	--	32	51	1	*	--	--	84	150	11	5	--	--	1	1
Kalkaska	1	*	1	749	1,183	94	--	2	6	2,036	302	307	40	3	--	--	28
Lake	--	--	--	464	941	39	--	4	3	1,451	467	321	14	2	--	--	30
Leelanau	--	--	--	--	22	3	--	5	5	34	64	456	24	--	--	1	42
Manistee	--	*	--	61	1,280	7	--	*	30	1,378	508	684	21	*	--	2	124
Mason	--	--	--	2	245	6	--	--	7	260	326	168	35	2	--	--	31
Mecosta	--	--	--	4	228	75	*	--	*	307	154	85	25	3	--	--	2
Midland	--	--	--	*	18	8	--	*	*	27	200	6	16	1	--	*	4
Missaukee	1	1	*	177	406	22	--	22	2	632	481	227	25	1	--	--	5
Montmorency	4	--	3	525	318	60	--	131	*	1,040	522	135	199	3	--	*	14
Newaygo	--	--	--	10	919	52	--	--	9	990	594	215	8	7	--	11	49
Oceana	--	--	--	--	39	9	--	--	5	53	298	100	3	2	--	--	25
Ogemaw	--	--	--	327	53	14	--	6	--	400	342	109	132	5	--	--	4
Osceola	*	*	*	8	217	19	*	10	2	257	596	667	48	5	--	--	35
Oscoda	*	*	*	2,529	961	174	--	1	*	3,666	223	137	88	2	--	--	15
Otsego	10	--	10	579	516	94	96	20	--	1,325	769	709	182	4	--	--	116
Presque Isle	75	--	38	465	80	20	--	337	*	1,015	385	131	482	4	--	--	36
Roscommon	--	--	--	940	832	55	--	1	--	1,828	657	32	48	*	--	--	*
Wexford	1	--	1	156	2,249	29	--	1	2	2,439	289	386	7	1	--	--	39
Total	234	5	129	10,433	15,189	1,235	112	1,111	120	28,569	11,582	8,576	2,680	97	--	15	1,358

* Less than 500 cubic feet.

(Table 20 continued on next page.)

(Table 20 continued.)

Unit and county	Balsam Fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white cedar	Hemlock	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Southern Lower Peninsula																	
Allegan	--	--	--	--	899	10	--	--	--	909	298	10	--	--	1	8	21
Barry	--	--	--	--	101	12	--	--	--	113	143	394	*	--	21	26	19
Berrien	--	--	--	--	--	--	--	--	--	--	31	192	1	--	1	3	11
Branch	--	--	--	--	--	--	--	--	--	--	110	9	--	--	1	5	--
Calhoun	--	--	--	--	1	--	--	--	--	1	130	10	--	--	24	28	5
Cass	--	--	--	--	--	--	--	--	--	--	61	11	--	--	11	11	2
Clinton	--	--	--	--	--	--	--	--	--	--	49	7	--	--	--	23	--
Eaton	--	--	--	--	--	--	--	--	--	--	200	84	--	--	*	21	7
Genesee	--	--	--	--	--	--	--	--	--	--	22	52	--	--	--	2	2
Gratiot	--	--	--	--	*	*	--	--	--	*	93	14	--	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	4	88	--	--	--	3	--
Huron	--	--	--	--	--	--	--	--	--	--	40	8	8	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	25	47	--	--	--	13	4
Ionia	--	--	--	--	--	--	--	--	--	--	101	46	--	*	--	5	69
Jackson	--	--	--	--	*	*	--	--	--	*	21	--	--	--	36	30	--
Kalamazoo	--	--	--	--	2	1	--	--	--	3	29	2	--	--	1	7	1
Kent	--	--	--	--	84	2	--	--	--	86	212	305	*	*	*	6	2
Lapeer	--	--	--	--	*	*	--	--	--	1	89	80	2	--	--	7	2
Lenawee	--	--	--	--	--	1	--	--	--	1	11	206	--	--	19	15	22
Livingston	--	--	--	--	1	--	--	--	--	1	62	--	--	--	*	34	--
Macomb	--	--	--	--	--	--	--	--	--	--	58	14	--	--	--	10	4
Monroe	--	--	--	--	--	--	--	--	--	--	3	1	--	--	13	9	--
Montcalm	--	--	--	4	269	45	--	--	--	319	307	41	9	*	*	6	25
Muskegon	--	--	--	--	153	16	--	--	--	169	265	8	1	*	--	*	33
Oakland	--	--	--	--	*	1	--	--	--	1	92	2	--	--	*	14	2
Ottawa	--	--	--	--	47	*	--	--	--	47	109	84	*	*	--	1	32
Saginaw	--	--	--	--	--	1	--	--	--	1	66	7	2	--	9	3	--
Sanilac	--	--	--	--	--	--	--	--	--	--	12	14	3	--	--	--	*
Shiawassee	--	--	--	--	--	--	--	--	--	--	53	15	--	--	--	13	6
St Clair	--	--	--	--	--	*	--	--	--	*	46	37	--	--	--	3	10
St Joseph	--	--	--	--	--	*	--	--	--	*	97	6	--	--	35	27	--
Tuscola	--	--	--	--	2	--	--	--	--	2	87	50	5	--	--	*	*
Van Buren	--	--	--	--	*	2	--	--	--	3	115	88	--	--	12	12	23
Washtenaw	--	--	--	--	--	--	--	--	--	--	32	6	--	--	20	38	7
Wayne	--	--	--	--	--	--	--	--	--	--	3	1	--	--	--	2	1
Total	--	--	--	4	1,559	93	--	--	--	1,656	3,073	1,937	32	1	204	385	309
State total	6,716	567	5,865	24,338	22,988	4,398	288	6,100	3,077	74,337	30,013	38,792	13,207	3,013	204	400	4,521

(Table 20 continued on next page.)

(Table 20 continued.)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Eastern Upper Peninsula																	
Alger	59	--	--	--	--	--	263	1,306	182	45	--	--	117	11	--	5,974	8,422
Chippewa	19	--	--	--	--	--	696	2,958	53	21	--	--	47	2	--	5,383	8,359
Delta	74	--	--	--	--	--	309	3,551	161	66	1	--	211	12	--	7,922	12,540
Luce	19	--	--	--	--	--	413	1,374	48	24	--	--	47	6	--	3,658	5,526
Mackinac	32	--	--	--	--	--	658	2,176	84	24	--	--	276	5	--	6,035	8,617
Menominee	109	--	--	--	--	--	245	3,722	91	128	3	--	121	37	--	7,472	10,427
Schoolcraft	42	--	--	--	--	--	258	1,737	149	30	1	--	90	7	--	5,026	10,465
Total	354	--	--	--	--	--	2,843	16,822	768	338	5	--	909	80	--	41,470	64,357
Western Upper Peninsula																	
Baraga	131	--	--	--	--	*	171	2,384	82	141	1	--	382	8	--	8,387	9,859
Dickinson	46	--	--	--	--	--	348	6,189	104	91	2	--	176	8	--	9,762	13,758
Gogebic	162	--	--	--	--	1	54	2,164	77	148	7	--	448	77	--	7,401	8,142
Houghton	83	--	--	--	--	*	277	2,439	134	232	5	--	304	11	--	8,987	10,799
Iron	99	39	--	--	--	*	261	4,309	160	196	6	--	375	27	--	11,936	14,076
Keweenaw	8	--	--	--	--	--	--	176	10	204	--	--	31	2	--	1,611	1,926
Marquette	147	--	--	--	--	--	812	7,113	375	511	7	--	365	32	--	18,353	28,135
Ontonagon	441	--	--	--	--	3	356	6,889	60	248	4	--	883	13	--	15,156	16,124
Total	1,116	39	--	--	--	4	2,279	31,663	1,001	1,771	32	--	2,963	178	--	81,593	102,819
Northern Lower Peninsula																	
Alcona	143	1	--	--	--	--	153	4,937	1	1,302	46	--	126	*	--	7,709	8,825
Alpena	46	--	--	--	--	--	49	2,248	1	457	18	--	21	*	--	3,318	3,709
Antrim	70	--	--	--	--	--	1	406	3	10	--	--	356	1	--	1,823	1,966
Arenac	150	--	--	--	--	17	10	1,725	4	149	19	--	9	--	--	2,403	2,456
Bay	27	--	*	--	--	2	--	10	*	4	*	--	2	1	--	79	79
Benzie	81	--	--	--	--	--	--	228	21	120	66	--	91	*	--	1,397	2,061
Charlevoix	151	--	--	--	--	--	--	226	1	50	40	--	428	7	--	2,056	2,134
Cheboygan	42	--	--	--	--	--	14	2,755	--	200	1	--	163	*	--	4,660	6,095
Clare	42	--	--	--	--	1	--	2,484	22	861	76	--	1	--	--	4,062	4,512
Crawford	2	--	--	--	--	--	--	1,423	1	647	15	--	41	--	--	2,546	5,090
Emmet	94	--	--	--	--	--	--	1,081	10	38	--	--	162	2	--	2,767	3,156
Gladwin	41	--	--	--	--	3	1	2,235	*	435	22	--	6	7	--	3,255	3,374
Grand Traverse	24	--	--	--	--	--	1	504	19	285	55	--	53	--	--	1,474	2,239
Iosco	68	--	--	--	--	32	28	1,307	1	196	13	--	18	--	--	2,058	3,253
Isabella	35	--	--	--	--	1	*	968	4	179	16	--	5	*	--	1,377	1,462
Kalkaska	23	--	--	--	--	--	--	1,143	11	228	15	--	90	--	--	2,190	4,226
Lake	122	--	--	--	--	--	*	2,004	32	1,745	414	--	131	*	--	5,284	6,735
Leelanau	56	--	--	--	--	--	--	109	*	89	30	--	112	--	--	984	1,019
Manistee	79	--	--	--	--	--	--	805	121	716	172	--	111	--	--	3,343	4,721
Mason	81	--	--	--	--	--	*	1,096	30	676	169	--	44	--	--	2,658	2,918
Mecosta	49	--	--	--	--	--	--	1,270	13	145	46	--	28	*	--	1,819	2,126
Midland	63	--	*	--	--	24	1	1,097	2	223	58	--	7	2	--	1,703	1,730
Missaukee	39	--	--	--	--	--	--	2,131	18	361	60	--	37	--	--	3,384	4,016
Montmorency	62	--	--	--	--	--	15	3,536	*	740	14	--	79	--	--	5,322	6,362
Newaygo	84	--	3	--	7	--	--	1,754	54	1,612	356	--	34	1	*	4,789	5,776
Oceana	35	--	--	--	--	--	*	658	21	563	142	--	17	--	*	1,863	1,917
Ogemaw	84	--	--	--	--	*	33	2,177	4	690	14	--	56	--	--	3,651	4,051
Osceola	193	--	--	--	--	--	*	2,721	32	765	167	--	220	*	--	5,452	5,708
Oscoda	48	--	--	--	--	--	34	2,036	2	850	29	--	80	--	--	3,543	7,209
Otsego	65	--	--	--	--	--	6	2,123	1	78	1	--	352	1	--	4,405	5,729
Presque Isle	55	--	--	--	--	--	60	2,758	--	226	5	--	33	--	--	4,177	5,192
Roscommon	49	--	--	--	--	--	13	2,513	1	1,018	89	--	13	--	--	4,434	6,262
Wexford	42	--	1	--	--	--	--	1,110	46	463	32	--	68	--	*	2,485	4,924
Total	2,246	1	4	--	7	80	421	53,580	480	16,121	2,200	--	2,995	25	1	102,468	131,037

(Table 20 continued on next page.)

(Table 20 continued.)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Southern Lower Peninsula																	
Allegan	96	--	--	228	--	6	--	176	54	639	414	*	2	1	3	1,955	2,864
Barry	36	--	*	--	--	1	--	189	124	682	76	--	45	1	5	1,759	1,872
Berrien	21	--	--	104	160	6	1	11	84	77	11	*	5	15	4	737	737
Branch	58	--	8	--	--	4	--	2	13	11	53	--	3	3	--	279	279
Calhoun	139	--	--	3	--	2	--	14	96	85	87	--	83	3	3	713	714
Cass	25	*	48	9	--	1	--	2	78	118	69	*	6	20	4	477	477
Clinton	27	--	20	--	--	2	--	*	3	44	10	--	7	--	--	192	192
Eaton	80	--	26	--	--	216	1	2	13	44	15	--	31	6	--	746	746
Genesee	14	--	5	--	--	4	--	1	6	53	29	--	9	1	--	200	200
Gratiot	40	--	--	--	--	31	--	9	*	179	74	--	11	--	--	451	451
Hillsdale	9	--	16	--	--	--	--	--	1	3	9	--	1	1	--	135	135
Huron	35	--	--	--	--	91	--	170	11	6	2	--	6	--	--	377	377
Ingham	30	--	*	--	--	13	--	1	10	29	25	--	20	3	--	220	220
Ionia	48	--	10	*	--	--	--	3	33	183	28	--	86	1	--	614	614
Jackson	44	--	31	--	--	1	--	6	72	391	134	--	14	*	3	784	784
Kalamazoo	8	--	--	16	1	1	--	9	32	77	7	--	--	*	1	190	193
Kent	44	--	3	--	--	--	--	27	43	523	151	--	32	1	2	1,352	1,437
Lapeer	20	--	*	--	--	38	--	7	6	76	83	--	10	--	--	420	421
Lenawee	35	--	18	--	--	--	--	16	4	26	24	--	39	--	--	433	434
Livingston	26	--	--	--	--	*	--	1	29	285	143	--	4	--	--	585	585
Macomb	10	--	--	--	1	7	--	10	1	23	60	--	9	--	--	206	206
Monroe	2	--	15	--	--	2	--	--	4	49	31	--	--	--	--	131	131
Montcalm	164	--	--	--	--	--	*	291	24	796	409	*	10	24	*	2,107	2,426
Muskegon	17	--	--	--	--	--	--	160	5	1,048	300	--	*	--	--	1,838	2,006
Oakland	21	--	3	--	*	1	--	2	15	110	43	--	1	*	--	307	309
Ottawa	22	--	--	2	--	--	--	21	6	290	46	--	4	1	--	617	665
Saginaw	55	--	--	--	--	8	--	2	1	34	96	--	*	--	--	283	284
Sanilac	21	--	--	--	--	13	--	86	4	3	4	--	13	--	--	173	173
Shiawassee	109	--	*	--	--	12	--	1	19	127	49	--	16	--	--	420	420
St Clair	23	--	--	--	--	93	--	1	10	136	120	--	7	--	--	487	487
St Joseph	54	1	156	9	1	4	--	22	33	352	70	1	5	3	1	876	877
Tuscola	38	--	1	--	--	31	--	165	24	17	10	--	24	--	--	451	453
Van Buren	75	--	3	4	--	1	--	4	74	315	77	*	2	6	4	816	819
Washtenaw	32	--	104	--	--	4	--	1	27	131	284	--	9	--	*	694	694
Wayne	6	--	1	--	--	1	--	*	--	40	19	--	12	3	--	88	88
Total	1,482	1	470	375	163	590	2	1,410	959	7,002	3,064	2	528	92	33	22,115	23,771
State total	5,199	40	474	375	170	674	5,543	103,475	3,208	25,232	5,302	2	7,395	375	33	247,647	321,984

Table 21. -- Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1992

(In thousand board feet)1/

Unit and county	Balsam Fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Eastern Upper Peninsula																	
Alger	1,446	124	474	1,594	1,309	785	--	631	566	6,930	2,392	6,104	1,217	755	--	--	2,350
Chippewa	1,181	78	1,094	3,042	914	466	628	927	365	8,695	1,237	1,747	629	203	--	--	1,085
Delta	1,707	140	1,002	2,833	2,672	1,025	--	2,972	926	13,278	1,967	3,847	1,802	378	--	--	731
Luce	861	59	666	1,625	913	447	--	350	260	5,201	1,184	2,153	619	197	--	--	1,367
Mackinac	1,149	55	1,307	1,069	2,474	592	--	2,229	267	9,141	1,402	3,841	1,619	328	--	--	1,091
Menominee	1,382	115	941	1,147	1,629	950	--	1,936	387	8,488	1,295	2,790	2,868	251	--	--	333
Schoolcraft	2,341	206	1,102	3,962	3,909	1,828	--	1,863	784	15,995	1,819	3,192	1,004	452	--	--	1,146
Total	10,066	776	6,587	15,273	13,822	6,092	628	10,909	3,576	67,728	11,296	23,674	9,758	2,564	--	--	8,104
Western Upper Peninsula																	
Baraga	295	29	230	1,170	1,289	1,674	--	90	975	5,753	3,712	13,905	662	2,044	--	--	162
Dickinson	1,682	181	1,495	2,470	2,278	1,182	--	777	602	10,665	1,043	2,848	2,202	236	--	--	286
Gogebic	271	10	339	441	1,091	410	--	27	339	2,929	2,469	12,380	841	1,258	--	--	173
Houghton	616	45	799	1,258	1,368	1,353	--	73	671	6,183	3,816	14,040	992	1,670	--	--	311
Iron	931	59	2,274	720	539	512	--	421	213	5,668	3,392	10,907	3,171	942	--	--	433
Keweenaw	2	--	60	8	527	432	--	93	37	1,160	1,115	3,728	154	529	--	--	21
Marquette	3,778	398	3,660	9,239	2,561	2,511	--	998	2,090	25,236	5,052	12,351	3,321	1,238	--	--	1,245
Ontonagon	212	29	668	726	1,038	431	--	5	258	3,368	3,345	15,906	522	1,754	--	--	140
Total	7,787	752	9,525	16,033	10,691	8,505	--	2,484	5,185	60,962	23,945	86,065	11,864	9,671	--	--	2,773
Northern Lower Peninsula																	
Alcona	14	*	10	1,470	2,088	873	--	480	2	4,937	1,247	687	705	18	--	--	96
Alpena	51	*	40	220	359	218	--	708	1	1,596	734	120	331	28	--	--	10
Antrim	1	*	2	80	419	12	57	1	55	627	516	3,763	29	24	--	--	675
Arenac	--	--	--	78	34	2	1	13	--	128	594	111	87	6	--	--	9
Bay	--	--	--	--	1	1	--	1	--	2	61	40	--	--	--	--	--
Benzie	--	6	--	--	3,443	15	--	4	44	3,512	632	2,961	15	1	--	--	416
Charlevoix	--	--	1	13	129	21	--	192	23	379	462	3,627	237	70	--	--	813
Cheboygan	383	--	210	1,674	2,724	295	--	861	2	6,149	1,470	1,778	469	30	--	--	431
Clare	--	--	--	685	525	8	--	--	--	1,218	1,313	171	19	7	--	--	20
Crawford	--	*	--	5,766	4,460	462	--	27	--	10,716	556	277	64	4	--	--	85
Emmet	70	--	17	16	1,965	6	--	17	1	2,091	1,167	3,081	126	25	--	--	1,104
Gladwin	--	--	--	106	240	124	--	4	--	473	1,121	114	80	49	--	--	1
Grand Traverse	--	1	--	552	2,206	44	--	12	85	2,900	647	1,447	24	3	--	--	220
Iosco	2	*	--	651	4,211	424	*	8	2	5,298	812	118	142	--	--	--	5
Isabella	--	--	--	69	218	3	1	--	--	291	389	62	6	--	--	6	4
Kalkaska	1	*	3	2,647	5,676	509	--	9	31	8,875	950	1,428	65	13	--	--	140
Lake	--	--	--	1,031	4,288	172	--	9	8	5,507	1,621	1,607	20	6	--	--	116
Leelanau	--	--	--	--	68	18	--	22	28	136	299	2,462	40	--	--	3	207
Manistee	--	1	--	139	6,769	30	--	1	171	7,111	1,717	3,277	28	1	--	11	556
Mason	--	--	--	3	1,384	37	--	--	41	1,464	1,311	864	42	4	--	--	143
Mecosta	--	--	--	10	1,284	431	*	--	2	1,727	409	392	37	7	--	--	6
Midland	--	--	--	1	67	48	--	*	1	117	586	10	24	1	--	1	12
Missaukee	3	4	2	642	1,848	82	--	71	4	2,655	1,355	906	47	2	--	--	22
Montmorency	15	--	12	1,965	1,731	342	--	594	*	4,660	1,907	659	377	17	--	1	55
Newaygo	--	--	--	21	5,254	299	--	--	51	5,625	2,333	1,090	11	20	--	54	238
Oceana	--	--	--	--	188	55	--	--	30	272	1,329	547	4	5	--	--	134
Ogemaw	--	--	--	1,172	252	81	--	14	--	1,519	1,174	528	300	25	--	--	15
Osceola	*	*	*	19	1,208	105	*	47	12	1,392	2,079	3,451	60	14	--	--	160
Oscoda	*	*	*	8,522	4,578	979	--	2	*	14,082	563	673	219	9	--	--	75
Otsego	48	--	49	1,986	2,772	507	340	96	--	5,799	1,303	2,712	283	19	--	--	470
Presque Isle	242	--	115	1,558	450	110	--	1,418	1	3,894	796	654	759	24	--	--	138
Roscommon	--	--	--	2,698	3,714	315	--	4	--	6,731	2,379	135	113	*	--	--	1
Wexford	2	--	3	359	10,967	91	--	3	8	11,432	907	1,971	14	3	--	--	181
Total	832	12	463	34,153	75,517	6,719	398	4,616	603	123,314	34,739	41,725	4,779	437	--	77	6,558

* Less than 500 board feet.

1/ International 1/4-inch rule.

(Table 21 continued on next page.)

(Table 21 continued.)

Unit and county	Balsam Fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white cedar	Hemlock	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Southern Lower Peninsula																	
Allegan	--	--	--	--	5,122	56	--	--	--	5,178	700	56	--	--	7	40	114
Barry	--	--	--	--	582	70	--	--	--	652	715	2,227	*	--	114	131	105
Berrien	--	--	--	--	--	--	--	--	--	--	160	1,084	5	--	3	17	59
Branch	--	--	--	--	--	--	--	--	--	--	565	53	--	--	4	24	--
Calhoun	--	--	--	--	4	--	--	--	--	4	660	59	--	--	134	145	28
Cass	--	--	--	--	--	--	--	--	--	--	304	62	--	--	58	58	12
Clinton	--	--	--	--	--	--	--	--	--	--	252	37	--	--	--	118	--
Eaton	--	--	--	--	--	--	--	--	--	--	1,024	478	--	--	1	105	37
Genesee	--	--	--	--	--	--	--	--	--	--	112	295	--	--	--	11	12
Gratiot	--	--	--	--	1	*	--	--	--	2	474	79	--	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	19	499	--	--	--	15	--
Huron	--	--	--	--	--	--	--	--	--	--	207	43	41	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	127	267	--	--	--	65	23
Ionia	--	--	--	--	--	--	--	--	--	--	466	209	--	1	--	27	358
Jackson	--	--	--	--	1	1	--	--	--	2	106	--	--	--	201	155	--
Kalamazoo	--	--	--	--	11	6	--	--	--	17	147	11	--	--	6	35	3
Kent	--	--	--	--	481	11	--	--	--	492	839	1,722	1	1	1	32	12
Lapeer	--	--	--	--	2	2	--	--	--	4	457	450	10	--	--	34	12
Lenawee	--	--	--	--	--	7	--	--	--	7	55	1,138	--	--	104	75	119
Livingston	--	--	--	--	4	--	--	--	--	4	319	--	--	--	1	175	--
Macomb	--	--	--	--	--	--	--	--	--	--	298	81	--	--	--	50	22
Monroe	--	--	--	--	--	--	--	--	--	--	15	8	--	--	73	48	--
Montcalm	--	--	--	10	1,533	261	--	--	--	1,803	1,438	138	46	1	*	31	114
Muskegon	--	--	--	--	879	90	--	--	--	969	1,273	40	5	1	--	2	175
Oakland	--	--	--	--	*	8	--	--	--	9	470	12	--	--	*	70	11
Ottawa	--	--	--	--	269	2	--	--	--	271	545	472	1	1	--	4	179
Saginaw	--	--	--	--	--	3	--	--	--	3	340	38	12	--	48	18	--
Sanilac	--	--	--	--	--	--	--	--	--	--	60	81	18	--	--	--	1
Shiawassee	--	--	--	--	--	--	--	--	--	--	274	86	--	--	--	67	31
St Clair	--	--	--	--	--	2	--	--	--	2	237	209	--	--	--	14	53
St Joseph	--	--	--	--	--	1	--	--	--	1	269	36	--	--	191	140	--
Tuscola	--	--	--	--	12	--	--	--	--	12	444	281	25	--	--	2	2
Van Buren	--	--	--	--	*	14	--	--	--	15	362	498	--	--	63	61	130
Washtenaw	--	--	--	--	--	--	--	--	--	--	163	36	--	--	112	194	38
Wayne	--	--	--	--	--	--	--	--	--	--	17	4	--	--	--	8	5
Total	--	--	--	10	8,903	534	--	--	--	9,446	13,913	10,786	163	5	1,121	1,972	1,653
State total	18,685	1,540	16,575	65,468	108,933	21,850	1,026	18,009	9,364	261,450	83,893	162,249	26,564	12,677	1,121	2,049	19,088

(Table 21 continued on next page.)

(Table 21 continued.)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Eastern Upper Peninsula																	
Alger	200	--	--	--	--	--	388	2,204	328	24	--	--	277	18	--	16,258	23,188
Chippewa	61	--	--	--	--	--	1,052	5,556	86	69	--	--	115	3	--	11,844	20,539
Delta	275	--	--	--	--	--	452	6,678	246	110	1	--	755	18	--	17,262	30,539
Luce	58	--	--	--	--	--	610	2,300	82	17	--	--	123	8	--	8,718	13,919
Mackinac	107	--	--	--	--	--	1,001	4,161	133	30	--	--	1,236	7	--	14,956	24,098
Menominee	480	--	--	--	--	--	387	7,592	133	456	4	--	415	159	--	17,164	25,653
Schoolcraft	135	--	--	--	--	--	390	2,996	247	15	*	--	207	11	--	11,615	27,610
Total	1,317	--	--	--	--	--	4,281	31,487	1,256	721	5	--	3,129	225	--	97,817	165,546
Western Upper Peninsula																	
Baraga	338	--	--	--	--	*	240	4,989	218	435	*	--	1,466	15	--	28,188	33,941
Dickinson	166	--	--	--	--	--	513	11,246	152	338	1	--	706	17	--	19,753	30,418
Gogebic	724	--	--	--	--	2	78	5,481	167	435	8	--	1,983	120	--	26,120	29,049
Houghton	278	--	--	--	--	*	402	5,641	232	908	18	--	1,234	19	--	29,562	35,744
Iron	319	198	--	--	--	*	383	9,487	300	444	6	--	1,464	41	--	31,487	37,155
Keweenaw	31	--	--	--	--	--	--	451	15	1,034	--	--	135	3	--	7,217	8,377
Marquette	476	--	--	--	--	--	1,191	12,905	588	2,075	3	--	1,122	57	--	41,623	66,859
Ontonagon	1,142	--	--	--	--	2	455	14,295	128	468	10	--	2,427	26	--	40,622	43,990
Total	3,473	198	--	--	--	5	3,263	64,495	1,802	6,138	46	--	10,536	297	--	224,571	285,533
Northern Lower Peninsula																	
Alcona	634	3	--	--	--	--	512	14,908	7	6,028	212	--	622	1	--	25,681	30,618
Alpena	192	--	--	--	--	--	87	5,968	1	1,790	53	--	100	1	--	9,417	11,013
Antrim	377	--	--	--	--	--	1	975	15	54	--	--	1,813	8	--	8,249	8,876
Arenac	589	--	--	--	--	88	31	5,160	7	500	18	--	42	--	--	7,244	7,371
Bay	87	--	*	--	--	8	--	17	*	20	2	--	8	4	--	248	251
Benzie	442	--	--	--	--	--	--	429	103	604	339	--	445	1	--	6,389	9,900
Charlevoix	812	--	--	--	--	--	--	620	5	259	208	--	2,134	35	--	9,282	9,661
Cheboygan	149	--	--	--	--	--	17	6,361	--	646	4	--	714	1	--	12,070	18,219
Clare	136	--	--	--	--	5	--	5,408	51	3,189	163	--	6	--	--	10,489	11,707
Crawford	3	--	--	--	--	--	--	4,182	5	2,281	67	--	178	--	--	7,701	18,417
Emmet	498	--	--	--	--	--	--	3,178	38	199	--	--	766	11	--	10,193	12,284
Gladwin	123	--	--	--	--	14	3	5,306	2	2,096	98	--	19	34	--	9,059	9,533
Grand Traverse	121	--	--	--	--	--	2	1,229	43	1,247	167	--	245	--	--	5,396	8,296
Iosco	338	--	--	--	--	163	111	3,627	7	863	65	--	87	--	--	6,338	11,635
Isabella	135	--	--	--	--	6	*	1,986	20	829	83	--	27	1	--	3,555	3,846
Kalkaska	121	--	--	--	--	--	--	2,992	49	1,074	20	--	444	--	--	7,297	16,172
Lake	631	--	--	--	--	--	1	4,946	85	7,431	1,247	--	617	2	--	18,331	23,839
Leelanau	310	--	--	--	--	--	--	216	1	437	135	--	517	--	--	4,625	4,761
Manistee	381	--	--	--	--	--	--	1,722	286	3,146	394	--	312	--	--	11,830	18,942
Mason	423	--	--	--	--	--	1	2,343	81	3,138	566	--	194	--	--	9,112	10,576
Mecosta	191	--	--	--	--	--	--	2,580	54	490	85	--	146	2	--	4,399	6,126
Midland	225	--	*	--	--	125	1	2,706	4	963	260	--	35	10	--	4,964	5,081
Missaukee	184	--	--	--	--	--	--	4,281	49	1,519	68	--	105	--	--	8,540	11,195
Montmorency	260	--	--	--	--	--	25	11,129	1	3,132	47	--	377	--	--	17,987	22,647
Newaygo	431	--	14	--	36	--	--	3,576	243	7,516	1,300	--	174	8	1	17,043	22,668
Oceana	182	--	--	--	--	--	1	1,434	92	2,459	312	--	87	--	1	6,588	6,861
Ogemaw	434	--	--	--	--	2	126	7,017	12	2,854	48	--	261	--	--	12,794	14,314
Osceola	995	--	--	--	--	--	2	7,072	121	3,589	747	--	1,086	2	--	19,377	20,769
Oscoda	213	--	--	--	--	--	113	6,404	8	3,529	135	--	404	--	--	12,346	26,428
Otsego	249	--	--	--	--	--	8	5,860	7	379	3	--	1,651	6	--	12,952	18,751
Presque Isle	172	--	--	--	--	--	103	7,076	--	751	11	--	126	--	--	10,611	14,505
Roscommon	256	--	--	--	--	--	59	7,496	6	4,581	297	--	64	--	--	15,388	22,119
Wexford	215	--	7	--	--	--	--	2,513	175	2,102	84	--	226	--	1	8,398	19,830
Total	10,510	3	21	--	36	412	1,204	140,717	1,580	69,697	7,239	--	14,031	127	3	333,895	457,209

(Table 21 continued on next page.)

(Table 21 continued.)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Southern Lower Peninsula																	
Allegan	527	--	--	1,172	--	32	--	430	279	2,253	1,000	1	9	3	18	6,643	11,821
Barry	196	--	1	--	--	4	--	715	636	3,557	399	--	229	3	26	9,057	9,709
Berrien	114	--	--	535	821	30	4	48	437	398	57	1	27	77	23	3,902	3,902
Branch	318	--	45	--	--	18	--	10	65	56	276	--	16	14	--	1,464	1,464
Calhoun	767	--	--	15	--	8	--	62	498	358	363	--	424	15	16	3,553	3,557
Cass	139	1	267	47	--	4	--	9	403	427	156	1	30	102	22	2,104	2,104
Clinton	147	--	111	--	--	10	--	2	14	227	53	--	35	--	--	1,007	1,007
Eaton	439	--	145	--	--	1,107	3	8	69	229	79	--	160	32	--	3,918	3,918
Genesee	79	--	29	--	--	19	--	5	32	277	149	--	45	3	--	1,067	1,067
Gratiot	220	--	--	--	--	159	--	34	1	931	386	--	57	--	--	2,342	2,344
Hillsdale	50	--	89	--	--	--	--	--	7	17	45	--	6	3	--	750	750
Huron	192	--	--	--	--	466	--	780	59	29	9	--	32	--	--	1,858	1,858
Ingham	166	--	1	--	--	67	--	3	52	149	131	--	104	15	--	1,169	1,169
Ionia	235	--	57	1	--	--	--	16	147	853	112	--	443	3	--	2,928	2,928
Jackson	242	--	169	--	--	4	--	26	372	2,036	702	--	74	1	18	4,105	4,107
Kalamazoo	46	--	--	81	3	3	--	40	163	398	38	--	--	1	7	982	999
Kent	242	--	14	--	--	--	--	86	221	2,531	615	--	163	8	9	6,496	6,988
Lapeer	107	--	1	--	--	196	--	32	29	397	435	--	53	--	--	2,213	2,217
Lenawee	195	--	101	--	--	--	--	49	19	134	123	--	200	--	--	2,312	2,319
Livingston	142	--	--	--	--	1	--	4	151	1,482	751	--	19	--	--	3,045	3,049
Macomb	54	--	--	--	3	37	--	44	6	118	310	--	45	--	--	1,068	1,068
Monroe	13	--	83	--	--	11	--	--	22	255	164	--	--	--	--	691	691
Montcalm	857	--	--	--	--	--	1	922	106	3,648	1,751	1	50	123	1	9,228	11,031
Muskegon	87	--	--	--	--	--	--	421	25	4,719	880	--	1	--	--	7,629	8,598
Oakland	116	--	19	--	2	6	--	11	75	572	230	--	6	1	--	1,603	1,611
Ottawa	121	--	--	8	--	--	--	44	29	1,486	210	--	18	6	--	3,123	3,394
Saginaw	300	--	--	--	--	41	--	8	4	177	501	--	2	--	--	1,489	1,492
Sanilac	113	--	--	--	--	66	--	395	21	17	20	--	65	--	--	858	858
Shiawassee	600	--	1	--	--	61	--	3	96	663	255	--	84	--	--	2,221	2,221
St Clair	126	--	--	--	--	474	--	6	54	708	625	--	37	--	--	2,544	2,546
St Joseph	296	4	862	46	6	21	--	100	170	1,546	160	6	26	16	8	3,901	3,902
Tuscola	211	--	4	--	--	159	--	754	121	87	53	--	124	--	--	2,267	2,280
Van Buren	411	--	17	21	--	4	--	21	386	1,358	198	1	12	34	20	3,599	3,614
Washtenaw	174	--	576	--	--	18	--	4	138	682	1,481	--	48	--	1	3,663	3,663
Wayne	34	--	3	--	--	3	--	1	--	207	101	--	64	14	--	460	460
Total	8,076	6	2,594	1,927	836	3,030	8	5,091	4,907	32,984	12,821	13	2,708	475	169	105,257	114,703
State total	23,376	207	2,616	1,927	871	3,447	8,756	241,790	9,545	109,540	20,111	13	30,404	1,124	172	761,540	1,022,990

Table 22. -- Harvest residues generated by industrial roundwood harvesting by Forest Survey Unit, county, and species group, Michigan, 1992

(In thousand cubic feet)

Unit and county	Balsam fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white cedar	Hemlock	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Eastern Upper Peninsula																	
Alger	157	13	50	215	139	66	--	59	84	783	271	849	122	90	--	--	211
Chippewa	121	8	107	391	85	38	--	82	55	887	102	217	53	27	--	--	85
Delta	182	15	106	384	226	80	--	280	112	1,386	249	731	223	51	--	--	117
Luce	93	6	70	212	82	36	--	34	42	576	117	326	78	20	--	--	100
Mackinac	119	6	131	141	166	42	--	197	40	842	142	461	183	44	--	--	101
Menominee	144	12	102	156	142	67	--	186	53	862	165	419	332	40	--	--	62
Schoolcraft	252	22	116	535	335	137	--	175	119	1,691	210	561	106	66	--	--	131
Total	1,068	84	683	2,033	1,174	466	--	1,014	505	7,027	1,255	3,564	1,097	337	--	--	807
Western Upper Peninsula																	
Baraga	32	3	24	148	91	99	--	8	67	471	266	1,072	82	137	--	--	31
Dickinson	182	20	162	335	237	90	--	81	91	1,198	146	476	277	44	--	--	65
Gogebic	28	1	34	48	77	25	--	2	32	248	245	1,149	57	88	--	--	38
Houghton	67	5	86	165	105	81	--	7	52	568	340	1,347	103	144	--	--	71
Iron	101	6	244	93	54	35	--	45	28	606	402	1,536	349	93	--	--	91
Keweenaw	*	--	6	1	67	28	--	8	2	113	75	278	10	33	--	--	5
Marquette	409	43	397	1,226	313	197	--	104	301	2,991	618	1,976	470	172	--	--	242
Ontonagon	23	3	71	89	74	26	--	*	23	309	281	1,400	49	119	--	--	32
Total	842	81	1,023	2,105	1,020	581	--	256	596	6,504	2,373	9,235	1,397	831	--	--	575
Northern Lower Peninsula																	
Alcona	*	*	1	49	108	49	--	41	*	248	106	43	81	1	--	--	8
Alpena	4	*	3	15	17	12	--	63	*	115	55	10	42	2	--	--	2
Antrim	*	*	*	*	27	*	*	*	2	30	31	202	3	1	--	--	38
Arenac	--	--	--	4	2	*	*	1	--	7	47	17	11	1	--	--	2
Bay	--	--	--	--	*	*	--	*	--	*	2	9	--	--	--	--	--
Benzie	--	*	--	--	184	*	--	*	2	186	35	157	2	*	--	--	23
Charlevoix	--	--	*	1	9	1	--	17	1	29	28	212	10	4	--	--	44
Cheboygan	24	--	17	55	167	17	--	75	*	354	77	103	27	2	--	--	24
Clare	--	--	--	19	16	*	--	--	--	35	82	26	2	1	--	--	3
Crawford	--	*	--	247	239	25	--	2	--	513	26	17	3	*	--	--	5
Emmet	*	--	*	2	113	*	--	1	*	116	54	174	3	1	--	--	59
Gladwin	--	--	--	12	13	7	--	*	--	32	73	14	7	3	--	--	*
Grand Traverse	--	*	--	53	126	2	--	1	5	187	44	89	4	1	--	--	14
Iosco	*	*	--	30	216	24	*	1	*	271	56	8	18	--	--	--	1
Isabella	--	--	--	8	15	*	*	--	--	24	16	3	*	--	--	*	*
Kalkaska	*	*	*	76	324	27	--	1	2	430	59	95	3	1	--	--	7
Lake	--	--	--	80	199	8	--	*	*	287	109	102	3	1	--	--	10
Leelanau	--	--	--	--	2	1	--	2	2	6	16	127	6	--	--	*	14
Manistee	--	*	--	*	365	1	--	*	10	377	97	213	4	*	--	1	42
Mason	--	--	--	*	78	2	--	--	2	83	80	51	5	1	--	--	9
Mecosta	--	--	--	1	72	24	*	--	*	98	35	34	5	2	--	--	1
Midland	--	--	--	*	2	3	--	*	*	5	25	1	3	*	--	*	1
Missaukee	*	*	*	58	121	3	--	3	*	186	113	97	6	*	--	--	2
Montmorency	1	--	1	101	103	19	--	52	*	277	117	38	41	1	--	*	4
Newaygo	--	--	--	3	296	17	--	--	3	318	134	66	1	3	--	3	15
Oceana	--	--	--	--	10	3	--	--	2	15	73	32	1	1	--	--	8
Ogemaw	--	--	--	87	12	5	--	1	--	105	74	34	31	1	--	--	2
Osceola	*	*	*	1	71	6	*	4	1	82	125	217	6	3	--	--	13
Oscoda	*	*	*	484	258	53	--	*	*	795	47	42	21	*	--	--	5
Otsego	4	--	4	68	168	28	*	8	--	282	84	154	11	1	--	--	24
Presque Isle	15	--	10	39	26	6	--	124	*	219	85	41	111	1	--	--	10
Roscommon	--	--	--	217	177	18	--	*	--	412	143	12	11	*	--	--	*
Wexford	*	--	*	16	579	2	--	*	*	598	62	120	2	1	--	--	15
Total	49	*	36	1,727	4,117	363	*	398	30	6,721	2,209	2,562	484	35	--	4	405

(Table 22 continued on next page.)

* Less than 500 cubic feet.

(Table 22 continued.)

Unit and county	Balsam fir	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white cedar	Hemlock	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry	Beech
Southern Lower Peninsula																	
Allegan	–	–	–	–	287	3	–	–	–	290	31	3	–	–	*	2	6
Barry	–	–	–	–	33	4	–	–	–	37	38	128	*	–	6	7	5
Berrien	–	–	–	–	–	–	–	–	–	–	8	64	*	–	*	1	3
Branch	–	–	–	–	–	–	–	–	–	–	29	3	–	–	*	1	–
Calhoun	–	–	–	–	*	–	–	–	–	*	34	3	–	–	7	8	1
Cass	–	–	–	–	–	–	–	–	–	–	16	3	–	–	3	3	1
Clinton	–	–	–	–	–	–	–	–	–	–	13	2	–	–	–	6	–
Eaton	–	–	–	–	–	–	–	–	–	–	53	25	–	–	*	5	2
Genesee	–	–	–	–	–	–	–	–	–	–	6	18	–	–	–	1	1
Gratiot	–	–	–	–	*	*	–	–	–	*	25	4	–	–	–	–	–
Hillsdale	–	–	–	–	–	–	–	–	–	–	1	29	–	–	–	1	–
Huron	–	–	–	–	–	–	–	–	–	–	11	2	2	–	–	–	–
Ingham	–	–	–	–	–	–	–	–	–	–	7	14	–	–	–	3	1
Ionia	–	–	–	–	–	–	–	–	–	–	24	10	–	*	–	1	18
Jackson	–	–	–	–	*	*	–	–	–	*	6	–	–	–	10	8	–
Kalamazoo	–	–	–	–	1	*	–	–	–	1	8	1	–	–	*	2	*
Kent	–	–	–	–	27	1	–	–	–	28	48	106	*	*	*	2	1
Lapeer	–	–	–	–	*	*	–	–	–	*	24	28	1	–	–	2	1
Lenawee	–	–	–	–	–	*	–	–	–	*	3	68	–	–	5	4	6
Livingston	–	–	–	–	*	–	–	–	–	*	17	–	–	–	*	9	–
Macomb	–	–	–	–	–	–	–	–	–	–	15	4	–	–	–	3	1
Monroe	–	–	–	–	–	–	–	–	–	–	1	*	–	–	4	3	–
Montcalm	–	–	–	1	87	15	–	–	–	103	75	8	3	*	*	2	6
Muskegon	–	–	–	–	49	5	–	–	–	54	70	3	*	*	–	*	10
Oakland	–	–	–	–	*	*	–	–	–	*	24	1	–	–	*	4	1
Ottawa	–	–	–	–	15	*	–	–	–	15	28	31	*	*	–	*	9
Saginaw	–	–	–	–	–	*	–	–	–	*	18	2	1	–	2	1	–
Sanilac	–	–	–	–	–	–	–	–	–	–	3	4	1	–	–	–	*
Shiawassee	–	–	–	–	–	–	–	–	–	–	14	5	–	–	–	3	2
St Clair	–	–	–	–	–	*	–	–	–	*	12	11	–	–	–	1	3
St Joseph	–	–	–	–	–	*	–	–	–	*	12	2	–	–	10	7	–
Tuscola	–	–	–	–	1	–	–	–	–	1	23	18	1	–	–	*	*
Van Buren	–	–	–	–	*	1	–	–	–	1	16	29	–	–	3	3	8
Washtenaw	–	–	–	–	–	–	–	–	–	–	8	2	–	–	6	10	2
Wayne	–	–	–	–	–	–	–	–	–	–	1	*	–	–	–	*	*
Total	–	–	–	1	500	30	–	–	–	532	721	633	10	1	56	102	85
State total	1,959	165	1,743	5,866	6,810	1,440	*	1,668	1,132	20,783	6,558	15,993	2,987	1,204	56	106	1,872

(Table 22 continued on next page.)

(Table 22 continued.)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Eastern Upper Peninsula																	
Alger	31	–	–	–	–	–	62	284	44	10	–	–	29	3	–	2,005	2,788
Chippewa	8	–	–	–	–	–	164	610	13	5	–	–	9	*	–	1,293	2,180
Delta	36	–	–	–	–	–	73	780	38	15	*	–	53	3	–	2,369	3,755
Luce	11	–	–	–	–	–	98	298	11	5	–	–	12	1	–	1,078	1,653
Mackinac	15	–	–	–	–	–	156	468	20	5	–	–	71	1	–	1,667	2,508
Menominee	46	–	–	–	–	–	58	821	22	28	1	–	31	10	–	2,033	2,895
Schoolcraft	23	–	–	–	–	–	61	378	36	7	*	–	22	2	–	1,601	3,292
Total	170	–	–	–	–	–	672	3,638	183	75	1	–	226	20	–	12,045	19,072
Western Upper Peninsula																	
Baraga	25	–	–	–	–	*	36	460	20	25	*	–	80	2	–	2,236	2,707
Dickinson	24	–	–	–	–	–	82	1,350	24	21	*	–	47	2	–	2,560	3,758
Gogebic	68	–	–	–	–	*	13	519	19	34	2	–	121	18	–	2,371	2,618
Houghton	33	–	–	–	–	*	64	547	32	52	2	–	77	3	–	2,814	3,382
Iron	55	10	–	–	–	*	62	977	38	45	1	–	100	6	–	3,766	4,371
Keweenaw	3	–	–	–	–	–	–	44	2	50	–	–	9	*	–	509	623
Marquette	80	–	–	–	–	–	192	1,552	89	123	1	–	95	8	–	5,618	8,609
Ontonagon	122	–	–	–	–	*	57	1,047	14	39	1	–	156	3	–	3,322	3,631
Total	409	10	–	–	–	*	506	6,495	239	389	7	–	685	42	–	23,196	29,699
Northern Lower Peninsula																	
Alcona	56	*	–	–	–	–	38	1,102	*	221	8	–	33	*	–	1,698	1,947
Alpena	20	–	–	–	–	–	12	506	*	54	1	–	6	*	–	709	823
Antrim	21	–	–	–	–	–	*	92	1	2	–	–	95	*	–	487	516
Arenac	36	–	–	–	–	5	2	390	1	23	4	–	2	–	–	541	548
Bay	2	–	*	–	–	*	–	2	*	1	*	–	*	*	–	17	17
Benzie	23	–	–	–	–	–	–	43	6	25	14	–	24	*	–	352	538
Charlevoix	43	–	–	–	–	–	–	44	*	11	8	–	111	2	–	517	546
Cheboygan	15	–	–	–	–	–	2	388	–	24	*	–	36	*	–	697	1,051
Clare	7	–	–	–	–	*	–	451	4	128	13	–	*	–	–	717	752
Crawford	*	–	–	–	–	–	–	258	*	77	3	–	9	–	–	399	912
Emmet	25	–	–	–	–	–	–	181	1	9	–	–	39	1	–	547	663
Gladwin	3	–	–	–	–	1	*	460	*	82	5	–	1	2	–	649	681
Grand Traverse	8	–	–	–	–	–	*	112	5	60	12	–	14	–	–	363	549
Iosco	21	–	–	–	–	8	7	284	*	30	3	–	5	–	–	441	712
Isabella	5	–	–	–	–	*	*	108	1	30	3	–	1	*	–	169	193
Kalkaska	7	–	–	–	–	–	–	210	3	48	3	–	23	–	–	459	889
Lake	38	–	–	–	–	–	*	421	7	349	84	–	34	*	–	1,157	1,444
Leelanau	16	–	–	–	–	–	–	24	*	19	6	–	29	–	–	258	264
Manistee	23	–	–	–	–	–	–	143	21	137	28	–	23	–	–	731	1,108
Mason	23	–	–	–	–	–	*	197	5	136	29	–	10	–	–	549	632
Mecosta	21	–	–	–	–	–	–	275	3	27	9	–	8	*	–	420	518
Midland	8	–	*	–	–	6	*	154	*	37	12	–	2	1	–	249	254
Missaukee	15	–	–	–	–	–	–	464	4	76	13	–	9	–	–	801	986
Montmorency	25	–	–	–	–	–	4	742	*	117	1	–	20	–	–	1,110	1,387
Newaygo	26	–	1	–	2	–	–	299	14	329	67	–	9	*	*	969	1,287
Oceana	12	–	–	–	–	–	*	131	5	103	13	–	5	–	*	383	397
Ogemaw	26	–	–	–	–	*	8	470	1	114	3	–	15	–	–	780	885
Osceola	59	–	–	–	–	–	*	572	7	156	32	–	58	*	–	1,248	1,331
Oscoda	19	–	–	–	–	–	9	440	*	126	5	–	21	–	–	736	1,532
Otsego	15	–	–	–	–	–	1	298	*	16	*	–	84	*	–	689	970
Presque Isle	30	–	–	–	–	–	14	612	–	20	*	–	8	–	–	932	1,151
Roscommon	14	–	–	–	–	–	3	545	*	178	19	–	3	–	–	929	1,342
Wexford	14	–	*	–	–	–	–	241	13	97	7	–	15	–	*	589	1,187
Total	676	–	1	–	2	21	103	10,660	106	2,858	406	–	753	7	*	21,291	28,011

(Table 22 continued on next page.)

(Table 22 continued.)

Unit and county	Ash	Butter-nut	Black walnut	Yellow poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Southern Lower Peninsula																	
Allegan	27	–	–	61	–	2	–	10	14	85	34	*	*	*	1	278	568
Barry	10	–	*	–	–	*	–	46	33	147	18	–	12	*	1	451	488
Berrien	6	–	–	28	43	2	*	3	24	16	2	*	1	4	1	207	207
Branch	16	–	2	–	–	1	–	1	3	2	11	–	1	1	–	72	72
Calhoun	38	–	–	1	–	*	–	3	27	14	14	–	22	1	1	174	174
Cass	7	*	14	2	–	*	–	*	22	16	5	*	2	5	1	100	100
Clinton	7	–	6	–	–	1	–	*	1	9	2	–	2	–	–	49	49
Eaton	22	–	8	–	–	57	*	*	4	9	3	–	8	2	–	199	199
Genesee	4	–	2	–	–	1	–	*	2	11	6	–	2	*	–	53	53
Gratiot	11	–	–	–	–	8	–	2	*	37	16	–	3	–	–	106	106
Hillsdale	2	–	5	–	–	–	–	–	*	1	2	–	*	*	–	42	42
Huron	10	–	–	–	–	24	–	43	3	1	*	–	2	–	–	98	98
Ingham	8	–	*	–	–	3	–	*	3	6	6	–	5	1	–	57	57
Ionia	12	–	3	*	–	–	–	1	7	38	4	–	23	*	–	142	142
Jackson	12	–	9	–	–	*	–	1	20	83	30	–	4	*	1	184	184
Kalamazoo	2	–	–	4	*	*	–	2	9	16	2	–	–	*	*	46	47
Kent	13	–	1	–	–	–	–	6	12	106	25	–	8	*	1	329	357
Lapeer	5	–	*	–	–	10	–	2	2	16	18	–	3	–	–	110	110
Lenawee	11	–	5	–	–	–	–	4	1	5	5	–	10	–	–	129	129
Livingston	7	–	–	–	–	*	–	*	8	61	32	–	1	–	–	135	135
Macomb	3	–	–	–	*	2	–	2	*	5	12	–	2	–	–	50	50
Monroe	1	–	5	–	–	1	–	–	1	10	7	–	–	–	–	31	31
Montcalm	43	–	–	–	–	–	*	62	6	153	74	*	3	6	*	440	543
Muskegon	6	–	–	–	–	–	–	37	1	201	34	–	*	–	–	363	417
Oakland	6	–	1	–	*	*	–	1	4	24	11	–	*	*	–	76	77
Ottawa	7	–	–	–	–	–	–	5	1	62	8	–	1	*	–	154	169
Saginaw	15	–	–	–	–	2	–	*	*	7	21	–	*	–	–	69	69
Sanilac	6	–	–	–	–	3	–	22	1	1	1	–	3	–	–	45	45
Shiawassee	30	–	*	–	–	3	–	*	5	27	11	–	4	–	–	104	104
St Clair	6	–	–	–	–	25	–	*	3	28	25	–	2	–	–	116	116
St Joseph	15	*	45	2	*	1	–	5	9	60	5	*	1	1	*	177	177
Tuscola	11	–	*	–	–	8	–	41	6	3	2	–	6	–	–	121	122
Van Buren	21	–	1	1	–	*	–	1	21	54	7	*	1	2	1	170	170
Washtenaw	9	–	30	–	–	1	–	*	7	27	63	–	3	–	*	167	167
Wayne	2	–	*	–	–	*	–	*	–	8	4	–	3	1	–	20	20
Total	409	*	136	100	43	158	*	303	261	1,352	521	1	140	25	9	5,067	5,598
State total	1,665	11	137	100	45	180	1,281	21,096	789	4,674	936	1	1,804	94	9	61,598	82,381

Table 23. -- Residues produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Michigan, 1992

(In thousand tons, green weight)

Survey Unit and Type of use	Wood residue							
	Total		Coarse 1/		Fine 2/		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Eastern Upper Peninsula								
Fiber products	37.77	65.91	28.09	63.74	9.68	2.16	--	8.56
Industrial fuel-mill	2.82	13.43	1.06	3.62	1.76	9.81	77.81	119.33
Industrial fuel-sold	10.26	18.59	1.60	3.63	8.66	14.96	9.95	17.31
Domestic fuel	1.70	6.26	1.54	5.74	0.16	0.53	0.41	2.08
Miscellaneous 3/	10.31	2.46	4.51	--	5.80	2.46	5.75	7.07
Not used	0.82	3.07	0.43	1.51	0.39	1.57	0.33	0.62
Total	63.68	109.72	37.22	78.23	26.45	31.49	94.25	154.96
Western Upper Peninsula								
Fiber products	5.10	99.71	5.10	96.99	--	2.72	--	--
Industrial fuel-mill	0.10	11.82	0.05	0.59	0.05	11.23	0.56	206.04
Industrial fuel-sold	5.70	47.38	0.46	3.31	5.24	44.06	2.39	77.52
Domestic fuel	0.87	4.45	0.86	4.45	0.01	0.01	0.31	1.68
Miscellaneous 3/	0.40	8.35	--	--	0.40	8.35	0.02	6.82
Not used	1.78	3.21	0.88	--	0.90	3.21	0.35	0.19
Total	13.95	174.92	7.35	105.34	6.59	69.58	3.63	292.25
Northern Lower Peninsula								
Fiber products	80.91	189.40	80.91	189.22	--	0.18	--	--
Charcoal	5.83	0.59	3.61	0.49	2.22	0.10	1.62	0.21
Industrial fuel-mill	1.12	5.46	0.73	1.60	0.40	3.86	6.82	30.30
Industrial fuel-sold	97.17	135.35	31.31	70.78	65.86	64.57	18.37	106.69
Domestic fuel	5.84	58.54	5.68	58.20	0.16	0.33	1.71	17.13
Miscellaneous 3/	20.84	128.27	8.91	13.27	11.93	115.00	41.49	94.47
Not used	5.57	18.77	5.22	9.02	0.35	9.75	0.97	4.41
Total	217.29	536.37	136.37	342.58	80.92	193.79	70.98	253.21
Southern Lower Peninsula								
Fiber products	0.19	70.74	0.19	70.74	--	--	--	--
Industrial fuel-mill	0.02	11.54	0.02	5.46	--	6.08	0.04	39.01
Industrial fuel-sold	0.16	7.97	0.16	3.87	--	4.10	--	0.12
Domestic fuel	0.58	25.85	0.57	25.38	*	0.47	0.18	5.85
Miscellaneous 3/	4.14	65.87	2.35	15.43	1.80	50.44	1.46	44.32
Not used	0.30	2.84	0.02	1.99	0.28	0.85	0.01	0.95
Total	5.39	184.82	3.31	122.88	2.08	61.93	1.69	90.25
All Units								
Fiber products	123.96	425.76	114.28	420.69	9.68	5.06	--	8.56
Charcoal	5.83	0.59	3.61	0.49	2.22	0.10	1.62	0.21
Industrial fuel-mill	4.07	42.26	1.86	11.28	2.21	30.98	85.23	394.67
Industrial fuel-sold	113.29	209.28	33.53	81.59	79.76	127.69	30.71	201.64
Domestic fuel	8.98	95.10	8.66	93.77	0.33	1.33	2.62	26.73
Miscellaneous 3/	35.69	204.96	15.76	28.70	19.93	176.25	48.72	152.68
Not used	8.48	27.89	6.55	12.52	1.93	15.37	1.66	6.18
Total	300.30	1,005.83	184.25	649.04	116.05	356.8	170.56	790.68

* Less than 5 tons.

1/ Suitable for chipping such as slabs, edgings, veneer cores, etc.

2/ Not suitable for chipping such as sawdust, veneer clippings, etc.

3/ Livestock bedding, mulch, small dimension, and specialty items.

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1995. **Michigan timber industry—an assessment of timber product output and use, 1992**. Resour. Bull. NC-162. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 64 p.

Reports findings of a survey of all primary wood-using mills in Michigan in 1992 and compares them with findings from earlier surveys. Production and receipts of industrial roundwood are reported by product, species, and county. Also reports the quantity, type, and disposition of wood and bark residues generated by Michigan's primary wood-using industry.

KEY WORDS: Bark, pulpwood, saw logs, residues, roundwood, veneer logs.

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.